

FIG. 1A. DNA SEQUENCE OF HIGH MOLECULAR WEIGHT PROTEIN

I (HMW1)

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1  ACAGCGTTCT CTTAATACTA GTACAAACCC ACAATAAAT ATGACAAACA
51  ACAATTACAA CACCTTTTTT GCAGTCTATA TGCAAATATT TTAAAAATA
101 GTATAAATCC GCCATATAAA ATGGTATAAT CTTTCATCTT TCATCTTTCA
151 TCTTTCATCT TTCATCTTTC ATCTTTCATC TTTTCATCTT CATCTTTCAT
201 CTTTCATCTT TCATCTTTCA TCTTTCATCT TTCATCTTTC ACATGCCCTG
251 ATGAACCGAG GGAAGGGAGG GAGGGCAAG AATGAAGAGG GAGCTGAACG
301 AACGCAAAATG ATAAAGTAAT TTAATTGTTC AACTAACCTT AGGAGAAAAT
351 ATGAACAAGC TATATCGTCT CAAATTCAGC AAACGCCCTGA ATGCTTTGGT
401 TGCTGTGTCT GAATTGGCAC GGGGTGTGA CCATTCCACA GAAAAAGGCA
451 GCGAAAAACC TGCTCGCATG AAAGTCCGTC ACTTAGCGTT AAAGCCACTT
501 TCCGCTATGT TACTATCTTT AGGTGTAACA TCTATTCCAC AATCTGTTT
551 AGCAAGCGGC TTACAAGGAA TGGATGTAGT ACACGGCACA GCCACTATGC
601 AAGTAGATGG TAATAAAACC ATTATCCGCA ACAGTGTGTA CGATATCATT
651 AATTGGAAC AATTTAACAT CGACCAAAAT GAAATGGTGC AGTTTTTACA
701 AGAAAAACAAC AACTCCGCCG TATTCAACCG TGTTACATCT AACCAAATCT
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FIG. 1B.

751 CCCAATTAAA AGGATTTTA GATTCTAAG GACAAGTCTT TTTAATCAAC
801 CCAAATGGTA TCACAATAGG TAAAGACGCA ATTATTAACA CTAATGGCTT
851 TACGGCTTCT ACGCTAGACA TTTCTAACGA AAACATCAAG GCGCGTAATT
901 TCACCTTCGA GCAAACCAA GATAAAGCGC TCGCTGAAAT TGTGAATCAC
951 GGTTTAATTA CTGTCGGTAA AGACGGCAGT GTAAATCTTA TTGGTGGCAA
1001 AGTGAAAAAC GAGGTGTGA TTAGCGTAAA TGGTGGCAGC ATTTCTTTAC
1051 TCGCAGGGCA AAAAATCACC ATCAGCGATA TAATAAACCC AACCATTACT
1101 TACAGCATTG CCGCGCCTGA AAATGAAGCG GTCAATCTGG GCGATATTTT
1151 TGCCAAAGGC GGTAACATTA ATGTCCGTGC TGCCACTATT CGAAACCAAG
1201 GTAAACTTTC TGCTGATTCT GTAAGCAAAG ATAAAAGCGG CAATATTGTT
1251 CTTTCCGCCA AAGAGGGTGA AGCGGAAATT GGCGGTGTAA TTTCCGCTCA
1301 AAATCAGCAA GCTAAAGGCG GCAAGCTGAT GATTACAGGC GATAAAGTCA
1351 CATTAAAAAC AGGTGCAGTT ATCGACCTTT CAGGTAAAGA AGGGGAGAA
1401 ACTTACCCTG GCGGTGACGA GCGCGGCGAA GGTA AAAAGG GCATTC AATT
1451 AGCAAAGAAA ACCTCTTTAG AAAAAGGCTC AACCATCAAT GTATCAGGCA
1501 AAGAAAAAGG CGGACGCGCT ATTGTGTGGG GCGATATTGC GTTAATTGAC

FIG. 1C.

1551	GGCAATATTA	ACGCTCAAGG	TAGTGTGAT	ATCGCTAAAA	CCGGTGGTTT
1601	TGTGGAGACG	TCGGGGCATG	ATTATATCAT	CAAAGACAAT	GCAATGTGTG
1651	ACGCCAAAGA	GTGGTTGTTA	GACCCGGATA	ATGTATCTAT	TAATGCAGAA
1701	ACAGCAGGAC	GCAGCAATAC	TTCAGAAGAC	GATGAATACA	CGGATCCGG
1751	GAATAGTGCC	AGCACCCCAA	AACGAAACAA	AGAAAAGACA	ACATTAACAA
1801	ACACAACTCT	TGAGAGTATA	CTAAAAAAG	GTACCTTTGT	TAACATCACT
1851	GCTAATCAAC	GCATCTATGT	CAATAGCTCC	ATTAATTTAT	CCAATGGCAG
1901	CTTAACTCTT	TGGAGTGAGG	GTCGGAGCGG	TGGCGGCGTT	GAGATTAACA
1951	ACGATATTAC	CACCGGTGAT	GATACCAGAG	GTGCAAACTT	AACAATTTAC
2001	TCAGGCGGCT	GGGTTGATGT	TCATAAAAAAT	ATCTCACTCG	GGGCGCAAGG
2051	TAACATAAAC	ATTACAGCTA	AACAAGATAT	CGCCTTTGAG	AAAGGAAGCA
2101	ACCAAGTCAT	TACAGGTCAA	GGGACTATTA	CCTCAGGCAA	TCAAAAAGGT
2151	TTTAGATTTA	ATAATGTCTC	TCTAAACGGC	ACTGGCAGCG	GACTGCAATT
2201	CACCACTAAA	AGAACCAATA	AATACGCTAT	CACAAATAAA	TTTGAAGGGA
2251	CTTTAAATAT	TTCAGGGAAA	GTGAACATCT	CAATGGTTT	ACCTAAAAAT
2301	GAAAGTGGAT	ATGATAAATT	CAAAGGACGC	ACTTACTGGA	ATTAAACCTC

FIG. 1D.

2351 CTTAAATGTT TCCGAGAGTG GCGAGTTTAA CCTCACTATT GACTCCAGAG
2401 GAAGCGATAG TGCAGGCACA CTTACCCAGC CTTATAATTT AAACGGTATA
2451 TCATTCAACA AAGACACTAC CTTTAATGTT GAACGAAATG CAAGAGTCAA
2501 CTTTGACATC AAGGCACCAA TAGGGATAAA TAAGTATTCT AGTTTGAAAT
2551 ACGCATCATT TAATGGAAAC ATTTCAAGTTT CGGGAGGGG GAGTGTGAT
2601 TTCACACTTC TCGCCTCATC CTC TAACGTC CAAACCCCG GTGAGTTAT
2651 AAATTCTAAA TACTTTAATG TTTCAACAGG GTCAAGTTA AGATTTAAAA
2701 CTTCAGGCTC AACAAAAACT GGCTTCTCAA TAGAGAAAGA TTTAACTTTA
2751 AATGCCACCG GAGGCAACAT AACACTTTTG CAAGTTGAAG GCACCGATGG
2801 AATGATTGGT AAAGGCATTG TAGCCAAAAA AACATAACC TTTGAAGGAG
2851 GTAACATCAC CTTTGGCTCC AGGAAAGCCG TAACAGAAAT CGAAGGCAAT
2901 GTTACTATCA ATAACAACGC TAACGTCACT CTTATCGGTT CGGATTTGA
2951 CAACCATCAA AAACCTTTAA CTATTAAAAA AGATGTCATC ATTAATAGCG
3001 GCAACCTTAC CGCTGGAGGC AATATTGTCA ATATAGCCGG AAATCTTACC
3051 GTTGAAAGTA ACGCTAATTT CAAAGCTATC ACAAATTCA CTTTTAATGT
3101 AGCGGGCTTG TTGACAACA AAGGCAATC AAATATTCC ATTGCCAAAG
3151 GAGGGGCTCG CTTTAAAGAC ATTGATAATT CCAAGAAATT AAGCATCACC

FIG. 1E.

3201 ACCAACTCCA GCTCCACTTA CCGCACTATT ATAAGCGGCA ATATAACCAA
3251 TAAAAACGGT GATTTAAATA TTACGAACGA AGGTAGTGAT ACTGAAATGC
3301 AAATTGGCGG CGATGTCTCG CAAAAGAAG GTAATCTCAC GATTCTTCT
3351 GACAAAATCA ATATTACCAA ACAGATAACA ATCAAGGCAG GTGTTGATGG
3401 GGAGAAATTC GATTCAGACG CGACAAACAA TGCCAATCTA ACCATTAAAA
3451 CCAAAGAATT GAAATTACG CAAGACCTAA ATATTTCAGG TTTCATAAAA
3501 GCAGAGATTA CAGCTAAAGA TGGTAGTGAT TTAACATATTG GTAACACCAA
3551 TAGTGCTGAT GGTACTAATG CCAAAAAAGT AACCTTTAAC CAGGTTAAAG
3601 ATTCAAAAAT CTCTGCTGAC GGTCAACAAG TGACACTACA CAGCAAAAGTG
3651 GAAACATCCG GTAGTAATAA CAACACTGAA GATAGCAGTG ACAATAATGC
3701 CGGCTTAACT ATCGATGCAA AAAATGTAAC AGTAAACAAC AATATTACTT
3751 CTCACAAAGC AGTGAGCATC TCTGCGACAA GTGGAGAAAT TACCACTAAA
3801 ACAGGTACAA CCATTACGC AACCCTGGT AACGTGGAGA TAACCGCTCA
3851 AACAGGTAGT ATCCTAGGTG GAATTGAGTC CAGCTCTGGC TCTGTAACAC
3901 TTA CTGCAAC CGAGGGCGCT CTTGCTGTAA GCAATATTTC GGGCAACACC
3951 GTTACTGTTA CTGCAAAATAG CGGTGCATTA ACCACTTTGG CAGGCTCTAC

FIG. 1F.

4001 AATTAAAGGA ACCGAGAGTG TAACCACTTC AAGTCAATCA GCGGATATCG
4051 GCGGTACGAT TTCTGGTGGC ACAGTAGAGG TTAAAGCAAC CGAAAGTTTA
4101 ACCACTCAAT CCAATTCAAA AATTAAAGCA ACAACAGGCG AGGCTAACGT
4151 AACAAAGTGCA ACAGGTACAA TTGGTGGTAC GATTTCGGGT AATACGGTAA
4201 ATGTTACGGC AAACGCTGGC GATTTAACAG TTGGGAATGG CGCAGAAAAT
4251 AATGCGACAG AAGGAGCTGC AACCTTAACT ACATCATCGG GCAAATTAAC
4301 TACCGAAGCT AGTTCACACA TTACTTCAGC CAAGGTCAG GTAAATCTTT
4351 CAGCTCAGGA TGGTAGCGTT GCAGGAAGTA TTAATGCCGC CAATGTGACA
4401 CTAAATACTA CAGGCACTTT AACTACCGTG AAGGGTTCAA ACATTAAATGC
4451 AACCAGCGGT ACCTTGGTTA TTAACGCAAA AGACGCTGAG CTAAATGGCG
4501 CAGCATTTGG TAACCCACACA GTGGTAAATG CAACCAACGC AAATGGCTCC
4551 GGCAGCGTAA TCGCGACAAC CTCAGCAGA GTGAACATCA CTGGGGATT
4601 AATCACAAATA AATGGATTAA ATATCATTTT AAAAAACGGT ATAAACACCG
4651 TACTGTATAA AGCGTTAAA ATTGATGTGA AATACATTCA ACCGGGTATA
4701 GCAAGCGTAG ATGAAGTAAT TGAAGCGAAA CGCATCCTTG AGAAGGTAAA
4751 AGATTTATCT GATGAAGAAA GAGAAGCGTT AGCTAAACTT GGAGTAAGTG
4801 CTGTACGTTT TATTGAGCCA AATAATACAA TTACAGTCGA TACACAAAT

FIG. 1G.

4851 GAATTGCAA CCAGACCATT AAGTCGAATA GTGATTTCTG AAGCAGGGC
4901 GTGTTTCTCA AACAGTGATG GCGCGACGGT GTCCGTTAAT ATCGCTGATA
4951 ACGGGCCGTA GCGGTCAGTA ATGACAAGG TAGATTTTCAT CCTGCAATGA
5001 AGTCATTTTA TTTTCGTATT ATTTACTGTG TGGGTTAAAG TTCAGTACGG
5051 GCTTTACCCA TCTTGTA AAA AATTACGGAG AATACAATAA AGTATTTTA
5101 ACAGGTTATT ATTATG

FIG. 2A. AMINO ACID SEQUENCE OF HIGH MOLECULAR WEIGHT

PROTEIN I

1 MNKIYRLKFS KRLNALVAVS ELARGCDHST EKGSEKPARM KVRHLALKPL
51 SAML LSLGVT SIPQSVLASG LQMDVVHGT ATMQVDGNKT IIRNSVDAIL
101 NWKQFNIDQN EMVQFLQENN NSAVFNRVTS NQISQLKGIL DSNQGVFLIN
151 PNGITIGKDA IINTNGFTAS TLDISNENIK ARNFTFEQTK DKALAEIVNH
201 GLITVGKDG S VNLIGGKVKN EGVISVNGGS ISLLAGQKIT ISDIINPTIT
251 YSIAAPENEA VNLGDIFAKG GNINVRAATI RNQKLSADS VSKDKSGNIV
301 LSAKEGEAEI GGVisAQNQQ AKGKLMITG DKVTLKTGAV IDLSGKEGGE
351 TYLGGDERGE GKNGIQLAKK TSLEKGSTIN VSGKEKGGRA IVWGDIALID
401 GNINAQGS D IAKTGGFVET SGHDLFIKDN AIVDAKEWLL DFDNVSINAE
451 TAGRSNTSED DEYTGSGNSA STPKRNKEKT TLTNTTLESI LKKGT FVNIT
501 ANQRIYVNSS INLSNGSLTL WSEGRSGGV EINNDITTGD DTRGANLTIY
551 SGGWVDVHKN ISLGAQGNIN ITAKQDIAFE KGSNQVITGQ GTITSGNQKG
601 FRFNNVSLNG TGSGLQFTTK RTNKYAITNK FEGTLNISGK VNISMVLPKN
651 ESGYDKFKGR TYWNLTSLNV SESGEFNLT I DSRGSDSAGT LTQPYNLNGI
701 SFNKDTTFNV ERNARVNFDI KAPIGINKYS SLNYASFNGN ISVSGGGSVD

FIG. 2B.

751 FTLLASSNV QTPGVVINSK YFNVSTGSSL RFKTSGSTKT GFSIEKDLTL
801 NATGGNITLL QVEGTDGMIG KGIVAKKNIT FEGGNITFGS RKAVTEIEGN
851 VTINNANVT LIGSDFDNHQ KPLTIKKDVI INSGNLTAGG NIVNIAGNLT
901 VESNANFKAI TNFTFNVGGL FDNKGNSNIS IAKGGARFKD IDNSKNLSIT
951 TNSSSTYRTI ISGNITNKNG DLNITNEGSD TEMQIGGDVS QKEGNLTISS
1001 DKINITKQIT IKAGVDGENS DSDATNNANL TIKTKELKLT QDLNISGFNK
1051 AEITAKDGSD LTIGNTNSAD GTNAKKVTFN QVKDSKISAD GHKVTLHSKV
1101 ETSGSNNNTE DSSDNNAGLT IDAKNVTVNN NITSHKAISI SATSGEITTK
1151 TGTINATG NVEITAQTS ILGGIESSG SVTLTATEGA LAVSNISGNT
1201 VTVTANSAL TTLAGSTIKG TESVTTSSQS GDIGGTISGG TVEVKATESL
1251 TTQSNKSIKA TTGEANVTSA TGTIGGTISG NTVNVTANAG DLTVGNGAEI
1301 NATEGAATLT TS SGKLTTEA SSHITSAGQ VNLSAQDGSV AGSINAANVT
1351 LNTTGTLTV KGSNINATSG TLVINAKDAE LNGAALGNHT VVNATNANGS
1401 GSVIATTSSR VNITGDLITI NGLNIIKNG INTVLLKGVK IDVKYIQPGI
1451 ASVDEVIEAK RILEKVKDLS DEEREALAKL GVSARFIEP NNTITVDTQN
1501 EFATRPLSRI VISEGRACFS NSDGATVCVN IADNGR

FIG. 3A.

DNA SEQUENCE OF HIGH MOLECULAR WEIGHT
PROTEIN II (HMW2)

1	TAAATATACA	AGATAATAAA	AATAAATCAA	GATTTTGTG	ATGACAAACA
51	ACAATTACAA	CACCTTTTTT	GCAGTCTATA	TGCAAAATAT	TTAAAAAAAT
101	AGTATAAATC	CGCCATATAA	AATGGTATAA	TCTTTCATCT	TTCATCTTTA
151	ATCTTTTCATC	TTTCATCTTT	CATCTTTCAT	CTTTCATCTT	TCATCTTTCA
201	TCTTTTCATCT	TTTCATCTTTC	ATCTTTTCATC	TTTCATCTTT	CACATGAAAT
251	GATGAACCGA	GGGAAGGGAG	GGAGGGGCAA	GAATGAAGAG	GGAGCTGAAC
301	GAACGCAAAT	GATAAAGTAA	TTTAATTGTT	CAACTAACCT	TAGGAGAAAA
351	TATGAACAAG	ATATATCGTC	TCAAATTTCAG	CAAACGCCCTG	AATGCTTTGG
401	TTGCTGTGTC	TGAATTGGCA	CGGGGTTGTG	ACCATTTCCAC	AGAAAAAGGC
451	TTCCGCTATG	TTACTATCTT	TAGGTGTAAC	CACTTAGCGT	TAAAGCCACT
501	TTCCGCTATG	TTACTATCTT	TAGGTGTAAC	ATCTATTCCA	CAATCTGTTT
551	TAGCAAGCGG	CTTACAAGGA	ATGGATGTAG	TACACGGCAC	AGCCACTATG
601	CAAGTAGATG	GTAATAAAAC	CATTATCCGC	AACAGTGTG	ACGCTATCAT
651	TAATTGAAA	CAATTTAACA	TCGACCAAAA	TGAAATGGTG	CAGTTTTTAC
701	AAGAAAAACA	CAACTCCGCC	GTATTCAACC	GTGTTACATC	TAACCAAATC

751	TCCCAATTAA	AAGGATTTT	AGATTCTAAC	GGACAAGTCT	TTTTAATCAA
801	CCCAAATGGT	ATCACAATAG	GTAAGACGC	AATTATT AAC	ACTAATGGCT
851	TTACGGCTTC	TACGCTAGAC	ATTCTAAGC	AAAACATCAA	GGCGCGTAAT
901	TTCACCTTCG	AGCAAACCAA	AGATAAAGCG	CTCGCTGAAA	TTGTGAATCA
951	CGGTTTAATT	ACTGTCGGTA	AAGACGGCAG	TGTAAATCTT	ATTG GTGGCA
1001	AAGTGAAAAA	CGAGGGTGTG	ATTAGCGTAA	ATGGTGGCAG	CATTTCCTTA
1051	CTCGCAGGC	AAAAAATCAC	CATCAGCGAT	ATAATAAACC	CAACCATTAC
1101	TTACAGCATT	GCCGCGCCTG	AAAATGAAGC	GGTCAATCTG	GGCGATATTT
1151	TTGCCAAAGG	CGGTAACATT	AATGTCCGTG	CTGCCACTAT	TCGAAAACCAA
1201	GGTAAACTTT	CTGCTGATT	TGTAAGCAAA	GATAAAAGCG	GCAATATTGT
1251	TCCTTCCGCC	AAAGAGGGTG	AAGCGAAAT	TGGCGGTGTA	ATTTCGGCTC
1301	AAAATCAGCA	AGCTAAAGGC	GGCAAGCTGA	TGATTACAGG	CGATAAAGTC
1351	ACATTAAAAA	CAGGTGCAGT	TATCGACCTT	TCAGGTAAAG	AAGGGGGAGA
1401	AACTTACCTT	GGCGGTGACG	AGCGGGCGGA	AGGTAAAAAC	GGCATTTCAAT
1451	TAGCAAAGAA	AACCTCTTTA	GAAAAAGGCT	CAACCATCAA	TGTATCAGGC
1501	AAAGAAAAAG	GCGGACGGCG	TATTGTGTGG	GGCGATATTG	CGTTAATTGA

FIG. 3C.

1551	CGGCAATATT	AACGCTCAAG	GTAGTGGTGA	TATCGCTAAA	ACCGTGGTT
1601	TTGTGGAGAC	ATCGGGGCAT	TATTTATCCA	TTGACAGCAA	TGCAATTGTT
1651	AAAACAAAAAG	AGTGGTTGCT	AGACCCCTGAT	GATGTAACAA	TTGAAGCCGA
1701	AGACCCCCCTT	CGCAATAATA	CCGGTATAAA	TGATGAATTC	CCAACAGGCA
1751	CCGGTGAAGC	AAGCGACCCT	AAAAAAAATA	GCGAACTCAA	AACAACGCTA
1801	ACCAATACAA	CTATTTCAAAT	TATCTGAAA	AACGCCCTGA	CAATGAATAT
1851	AACGGCATCA	AGAAAACTTA	CCGTTAATAG	CTCAATCAAC	ATCGGAAGCA
1901	ACTCCCACCTT	AATTCTCCAT	AGTAAAGGTC	AGCGTGGCGG	AGCGGTTCAG
1951	ATTGATGGAG	ATATTACTTC	TAAAGGCGGA	AATTTAACCA	TTTATTCTGG
2001	CGGATGGGTT	GATGTTCATA	AAAAATATTAC	GCTTGATCAG	GGTTTTTTAA
2051	ATATTACCGC	CGCTTCCGTA	GCTTTTGAAG	GTGGAATAA	CAAAGCACGC
2101	GACGCGGCAA	ATGCTAAAAAT	TGTCGCCCCAG	GGCACTGTAA	CCATTACAGG
2151	AGAGGGAAAA	GATTTCAGGG	CTAACAACGT	ATCTTTAAAC	GGAACGGGTA
2201	AAGGTCTGAA	TATCATTTCA	TCAGTGAATA	ATTTAACCCA	CAATCTTAGT
2251	GGCACAATTA	ACATATCTGG	GAATATAACA	ATTAACCAAA	CTACGAGAAA
2301	GAACACCTCG	TATTGGCAAA	CCAGCCATGA	TTCGCACTGG	AACGTCAGTG
2351	CTCTTAATCT	AGAGACAGGC	GCAAATTTTA	CCTTTATTAA	ATACATTTCA

FIG. 3D.

2401	AGCAATAGCA	AAGGCTTAAC	AACACAGTAT	AGAAGCTCTG	CAGGGGTGAA
2451	TTTTAACGGC	GTAAATGGCA	ACATGTCATT	CAATCTCAA	GAAGGAGCGA
2501	AAGTTAATTT	CAAATTAAAA	CCAAACGAGA	ACATGAACAC	AAGCAAACCT
2551	TTACCAATTC	GGTTTTTAGC	CAATATCACA	GCCACTGGTG	GGGGCTCTGT
2601	TTTTTTTGAT	ATATATGCCA	ACCATTCTGG	CAGAGGGGCT	GAGTTAAAAA
2651	TGAGTGAAAT	TAAATATCTCT	AACGGCGCTA	ATTTTACCCT	AAATTCCCCT
2701	GTTCGCGGCG	ATGACGCTTT	TAAAAATCAAC	AAAGACTTAA	CCATAAATGC
2751	AACCAATTCA	AATTTCAGCC	TCAGACAGAC	GAAAGATGAT	TTTTATGACG
2801	GGTACGCACG	CAATGCCATC	AATTCAACCT	ACAACATATC	CATTCTGGGC
2851	GGTAATGTCA	CCCTTGGTGG	ACAAAACCTCA	AGCAGCAGCA	TTACGGGGAA
2901	TATTACTATC	GAGAAAGCAG	CAAATGTTAC	GCTAGAAGCC	AATAACGCC
2951	CTAATCAGCA	AAACATAAGG	GATAGAGTTA	TAAAACTTGG	CAGCTTGCTC
3001	GTTAATGGGA	GTTTAAGTTT	AACTGGCGAA	AATGCAGATA	TTAAAGGCAA
3051	TCTCACTATT	TCAGAAAGCG	CCACTTTTAA	AGGAAAGACT	AGAGATACCC
3101	TAAATATCAC	CGGCAATTTT	ACCAATAATG	GCACTGCCGA	AATTAATATA
3151	ACACAAGGAG	TGGTAAAACT	TGGCAATGTT	ACCAATGATG	GTGATTTAAA

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FIG. 3F.

4001	CAATTTCGG	TAATACGGTA	AATGTTACGG	CAAACGCTGG	CGATTAAACA
4051	GTTGGGAATG	GCGCAGAAAT	TAAATGCGACA	GAAGAGCTG	CAACCTTAAC
4101	CGCAACAGGG	AATACCTTGA	CTACTGAAGC	CGGTTCTAGC	ATCACTTCAA
4151	CTAAGGGTCA	GGTAGACCTC	TTGGCTCAGA	ATGGTAGCAT	CGCAGGAAGC
4201	ATTAATGCTG	CTAATGTGAC	ATTAAATACT	ACAGGCACCT	TAACCAACCGT
4251	GGCAGGCTCG	GATATTAAAG	CAACCAGCGG	CACCTTGGTT	ATTAACGCCAA
4301	AAGATGCTAA	GCTAAATGGT	GATGCATCAG	GTGATAGTAC	AGAAGTGAAT
4351	GCAGTCAACG	CAAGCGGCTC	TGGTAGTGTG	ACTGCCGCCAA	CCTCAAGCAG
4401	TGTGAATATC	ACTGGGGATT	TAAACACAGT	AAATGGGTTA	AATATCATTT
4451	CGAAAGATGG	TAGAAACACT	GTGCGCTTAA	GAGGCAAGGA	AATTGAGGTG
4501	AAATATATCC	AGCCAGGTGT	AGCAAAGTGT	GAAGAAAGTAA	TTGAAGCGAA
4551	ACGCGTCCTT	GAAAAGGTAA	AAGATTTATC	TGATGAAGAA	AGAGAAACAT
4601	TAGCTAAACT	TGGTGTAAGT	GCTGTACGTT	TTGTTGAGCC	AAATAATACA
4651	ATTACAGTCA	ATACACAAAA	TGAATTTACA	ACCAGACCCGT	CAAGTCAAGT
4701	GATAATTCT	GAAGGTAAGG	CGTGTTTCTC	AAGTGGTAAAT	GGCGCACGAG
4751	TATGTACCAA	TGTTGCTGAC	GATGGACAGC	CGTAGTCAGT	AATTGACAAG
4801	GTAGATTTC	TCCTGCAATG	AAGTCATTTT	ATTTTCGTAT	TATTACTGT

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FIG. 3G.

4851 GTGGGTAAA GTTCAGTACG GGCTTTACCC ATCTTGTAAG AAATTACGGA
4901 GAATACAATA AAGTATTTT AACAGGTTAT TATTATG

FIG. 4A. AMINO ACID SEQUENCE OF HIGH MOLECULAR WEIGHT

PROTEIN 2

1	MNKIYRLKFS	KRLNALVAVS	ELARGCDHST	EKGSEKPARM	KVRHLALKPI
51	SAMLLSLGVT	SIPQSVLASG	LQGMDEVHGT	ATMQVDGNKT	IIRNSVDAII
101	NWKQFNIDQN	EMVQFLQENN	NSAVFNRVTS	NQISQLKGIL	DSNGQVFLIN
151	PNGITIGKDA	IINTNGFTAS	TLDISNENIK	ARNFTFEQTK	DKALAEIVNH
201	GLITVGDGS	VNLIGGKVKV	EGVISVNGGS	ISLLAQKIT	ISDIINPTIT
251	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNQGKLSADS	VSKDKSGNIV
301	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
351	TYLGGDERGE	GKNGIQLAKK	TSLEKGSTIN	VSGKEKGGRA	IWGDIALID
401	GNINAQSGD	IAKTGGFVET	SGHDLFIKDN	AIVDAKEWLL	DFDNVSINAE
451	DPLRNNNTGIN	DEFPGTGEA	SDPKKNSELK	TTLTNTTISN	YLKNAWTMNI
501	TASRKLTVNS	SINIGSNSHL	ILHSGQRGG	GVQIDGDITS	KGGNLTIIYSG
551	GWVDVHKNIT	LDQGLFNITA	ASVAFEGGNN	KARDAANAKI	VAQGTVTITG
601	EGKDFRANNV	SLNGTGKGLN	IISSVNNLTH	NLSGTINISG	NITINQTTTK
651	NTSYWQTSHD	SHWNVSALNL	ETGANFTFIK	YISSNSKGLT	TQYRSSAGVN
701	FNGVNGNMSF	NLKEGAKVNF	KLKPNENMNT	SKPLPIRFLA	NITATGGGSV

FIG. 4B.

751	FFDIYANHSG	RGAELKMSEI	NISNGANFTL	NSHVRGDDAF	KINKDLTINA
801	TNSNFSLRQT	KDDFYDGYAR	NAINSTYNIS	ILGGNVTLGG	QNSSSSITGN
851	ITIEKAANVT	LEANNAPNQQ	NIRDRVIKLG	SLLVNGSLSL	TGENADIKGN
901	LTISESATFK	GKTRDTLNIT	GNFTNNGTAE	INITQGVVKL	GNVTNDGDLN
951	ITTHAKRNQR	SIIGGDIINK	KGSLNITDSN	NDAEIQIGGN	ISQKEGNLTI
1001	SSDKINITKQ	ITIKKGIDGE	DSSSDATSNA	NLTIKTKELK	LTEDLSISGF
1051	NKAEITAKDG	RDLTIGNSND	GNSGAEAKTV	TFNNVKDSKI	SADGHNVTLN
1101	SKVKTSSSNG	GRESNSDNDT	GLTITAKNVE	VNKDITSLKT	VNITASEKVT
1151	TTAGSTINAT	NGKASITTKT	GDISGTISGN	TVSVSATVDL	TTKSGSKIEA
1201	KSGEANVTSA	TGTIGGTISG	NTVNVATANAG	DLTVGNCAEI	NATEGAATLT
1251	ATGNTLTTEA	GSSITSTKGQ	VDLLAQNGSI	AGSINAANVT	LNTTGTLTTV
1301	AGSDIKATSG	TLVINAKDAK	LNGDASGDST	EVNAVNASGS	GSVTAATSSS
1351	VNITGDNLTV	NGLNIIISKDG	RNTVRLRGKE	IEVKYIQPGV	ASVEEVIEAK
1401	RVLEKVKDLS	DEERETLAKL	GVSAVRFVEP	NNTITVNTQN	EFTTRPSSQV
1451	IISEGKACFS	SGNGARVCTN	VADDGQP		

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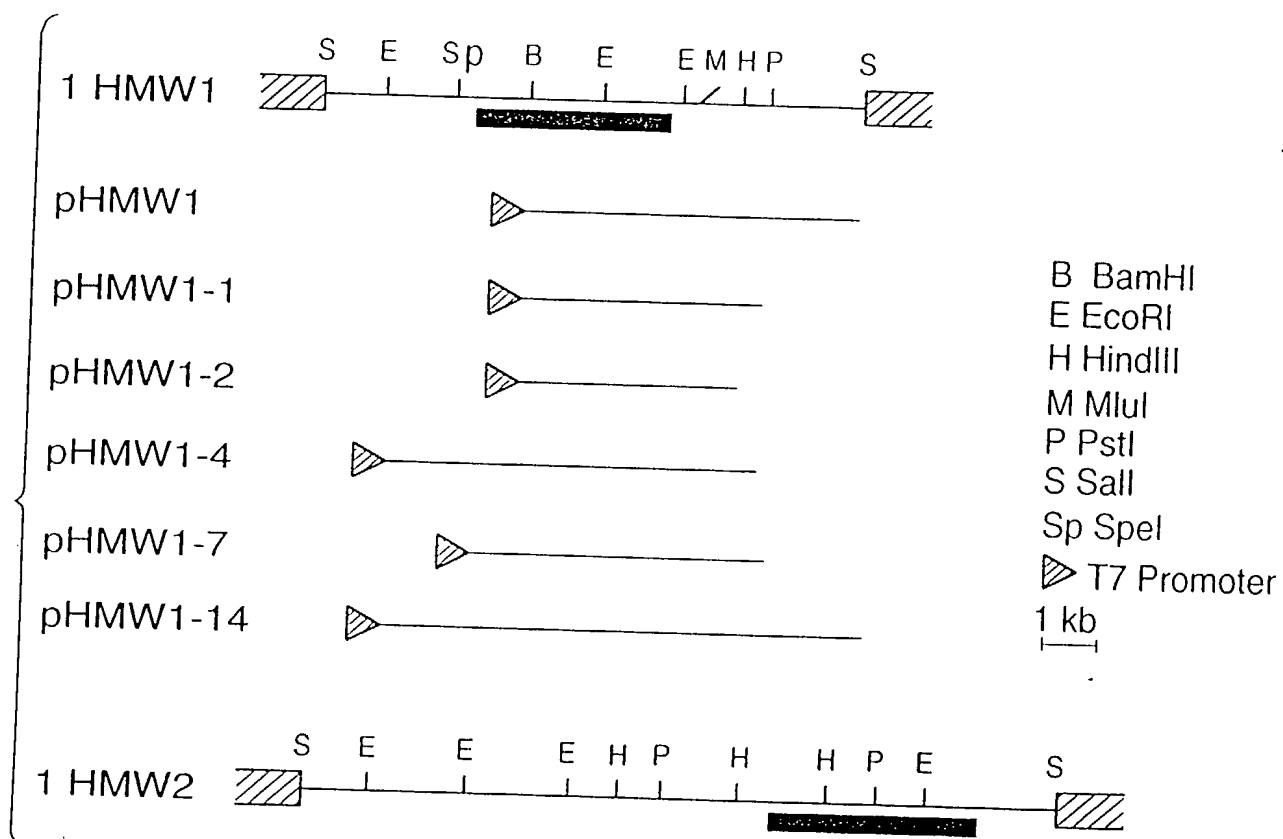
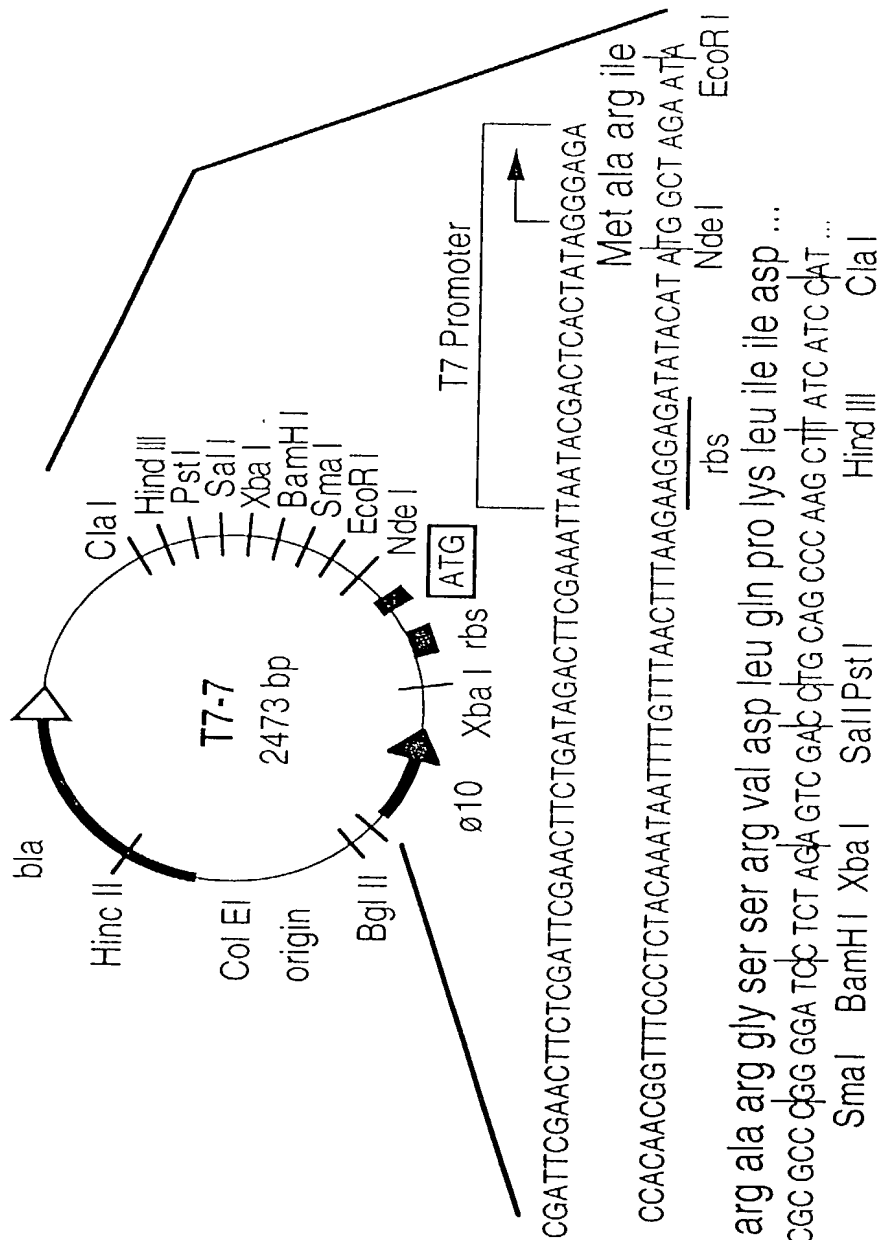


FIG.5 A.



F16.5B.

(A) Partial restriction maps of representative HMW1 and HMW2 recombinant phage and of HMW1 plasmid subclones. The shaded boxes indicate the locations of the structural genes. In the recombinant phage, transcription proceeds from left to right for the HMW1 gene and from right to left for the HMW2 gene. The methods used for construction of the plasmids shown are described in the text. (B) Restriction map of the T7 expression vector pT7-7. This vector contains the T7 RNA polymerase promoter $\phi 10$, a ribosome - binding site (rbs), and the translational start site for the T7 gene 10 protein upstream from a multiple cloning site (37).

FIG. 6A.

1	ACAGCGTTCT	CTTAATACTA	GTACAAACCC	ACAATAAAAT	ATGACAAACA
51	ACAATTACAA	CACCTTTTTT	GCAGTCTATA	TGCAAAATATT	TTAAAAAATA
101	GTATAAATCC	GCCATATAAA	ATGGTATAAT	CTTTCATCTT	TCATCTTTCA
151	TCTTTCATCT	TTCATCTTTC	ATCTTTCATC	TTTCATCTTT	CATCTTTCAT
201	CTTTCATCTT	TCATCTTTCA	TCTTTCATCT	TTTCATCTTC	ACATGAAATG
251	ATGAACCGAG	GGAAGGAGG	GAGGGCAAG	AATGAAAGAG	GAGCTGAACG
301	AACGCAAAATG	ATAAAGTAAT	TTAATTGTTC	AACATAACCTT	AGGAGAAAAAT
351	ATGAACAAGA	TATATCGTCT	CAAATTCAGC	AAACGCCCTGA	ATGCTTTTGGT
401	TGCTGTGTCT	GAATTGGCAC	GGGGTTGTGA	CCATTCCACA	GAAAAAGGCA
451	GCGAAAAACC	TGCTCGCATG	AAAGTGCCTC	ACTTAGCGTT	AAAGCCACTT
501	TCCGCTATGT	TACTATCTTT	AGGTGTAACA	TCTATTCCAC	AATCTGTTTT
551	AGCAAGCGGC	TTACAAGGAA	TGGATGTAGT	ACACGGCACA	GCCACTATGC
601	AAGTAGATGG	TAATAAAACC	ATTATCCGCA	ACAGTGTGA	CGCTATCATT
651	AATTGGAAAC	AATTTAACAT	CGACCAAAAT	GAAATGGTGC	AGTTTTTACA
701	AGAAAACAAC	AACTCCGCCG	TATTCAACCG	TGTTACATCT	AACCAAATCT
751	CCCAATTAAA	AGGGATTTTA	GATCTAACG	GACAAGTCTT	TTTAATCAAC

801	CCAAATGGTA	TCACAATAGG	TAAAGACGCA	ATTATTAACA	CTAATGGCTT
851	TACGGCTTCT	ACGCTAGACA	TTTCTAACGA	AAACATCAAG	GCGCGTAATT
901	TCACCTTCGA	GCAAACCAAA	GATAAAGCGC	TCGCTGAAAT	TGTGAATCAC
951	GGTTTAATTA	CTGTCGGTAA	AGACGGCAGT	GTAAATCTTA	TTGGTGGCAA
1001	AGTGAAAAAC	GAGGGTGTGA	TTAGCGTAAA	TGGTGGCAGC	ATTTCTTTAC
1051	TCGCAGGGCA	AAAAATCACC	ATCAGCGATA	TAAATAACCC	AACCATTA
1101	TACAGCATTG	CCGCGCCTGA	AAATGAAGCG	GTCAATCTGG	GCGATATTTT
1151	TGCCAAAGGC	GGTAACATTA	ATGTCCGTGC	TGCCACTATT	CGAAACCAAG
1251	CTTTCCGCCA	AAGAGGGTGA	AGCGGAAATT	GGCGGTGTAA	TTTCCGCTCA
1301	AAATCAGCAA	GCTAAAGGCG	GCAAGCTGAT	GATTACAGGC	GATAAAGTCA
1351	CATTAAAAAC	AGGTGCAGTT	ATCGACCTTT	CAGGTAAAGA	AGGGGGAGAA
1401	ACTTACCCTG	GCGGTGACGA	GCGCGGCGAA	GGTAAAAAAG	GCAATCAATT
1451	AGCAAAGAAA	ACCTCTTTAG	AAAAGGCTC	AACCATCAAT	GTATCAGGCA
1501	AAGAAAAAAG	CGGACGCGCT	ATTGTGTGGG	GCGATATTGC	GTAAATTGAC
1551	GGCAATATTA	ACGCTCAAGG	TAGTGGTGAT	ATCGCTAAAA	CCGGTGGTTT
1601	TGTGGAGACG	TCGGGGCATG	ATTTATTTCAT	CAAAGACAAT	GCAATTGTTG

FIG. 6C.

1651	ACGCCAAAGA	GTGGTTGTTA	GACCCGGATA	ATGTATCTAT	TAATGCAGAA
1701	ACAGCAGGAC	GCAGCAATAC	TTCAGAAGAC	GATGAATACA	CGGATCCGG
1751	GAATAGTGCC	AGCACCCCAA	AACGAAACAA	AGAAAAGACA	ACATTAAACAA
1801	ACACAACTCT	TGAGAGTATA	CTAAAAAAG	GTACCTTTGT	TAACATCACT
1851	GCTAATCAAC	GCATCTATGT	CAATAGCTCC	ATTAAATTAT	CCAATGGCAG
1901	CTTAACTCTT	TGGAGTGAGG	GTCGGAGCGG	TGGCGGCGTT	GAGATTAAACA
1951	ACGATATTAC	CACCGTGAT	GATACCAGAG	GTGCAAACTT	AACAATTTAC
2001	TCAGGCGGCT	GGTTGATGT	TCATAAAAAAT	ATCTCACTCG	GGCGGCAAGG
2051	TAACATAAAC	ATTACAGCTA	AACAAGATAT	CGCCTTTGAG	AAAGGAAGCA
2101	ACCAAGTCAT	TACAGGTCAA	GGGACTATTA	CCTCAGGCAA	TCAAAAAGGT
2151	TTTAGATTTA	ATAATGTCTC	TCTAAACGGC	ACTGGCAGCG	GACTGCAATT
2201	CACCACTAAA	AGAACCAATA	AATACGCTAT	CACAAATAAA	TTTGAAGGGA
2251	CTTTAAATAT	TTCAGGGGAA	GTGAACATCT	CAATGGTTTT	ACCTAAAAAT
2301	GAAAGTGGAT	ATGATAAATT	CAAAGGACGC	ACTTACTGGA	ATTTAACCTC
2351	GAAAGTGGAT	ATGATAAATT	CAAAGGACGC	CCTCACTATT	GACTCCAGAG
2401	GAAGCGATAG	TGCAGGCACA	CTTACCCAGC	CTTATAAATT	AAACGGTATA
2451	TCATTCAACA	AAGACACTAC	CTTTAATGTT	GAACGAAATG	CAAGAGTCAA

FIG. 6D.

2501	CTTTGACATC	AAGGCACCAA	TAGGATAAA	TAAGTATTCT	AGTTTGAATT
2551	ACGCATCATT	TAATGGAAAC	ATTTCAGTTT	CGGAGGGGG	GAGTGTTGAT
2601	TTCACACTTC	TCGCCTCATC	CTCTAACGTC	CAAACCCCGG	GTGTAGTTAT
2651	AAATTCTAAA	TACTTTAATG	TTTCAACAGG	GTC AAGTTTA	AGATTTAAAA
2701	CTTCAGGCTC	AACAAAAACT	GGCTTCTCAA	TAGAGAAAGA	TTTAACTTTA
2751	AATGCCACCG	GAGGCAACAT	AACACTTTTG	CAAGTTGAAG	GCACCGATGG
2801	AATGATTGGT	AAAGGCATTG	TAGCCAAAAA	AAACATAACC	TTTGAAGGAG
2851	GTAAGATGAG	GTTTGGCTCC	AGGAAAGCCG	TAAACAGAAAT	CGAAGGCAAT
2901	GTTACTATCA	ATAACAACGC	TAACGTCACT	CTTATCGGTT	CGGATTTTGA
2951	CAACCATCAA	AAACCTTTAA	CTATTAAAAA	AGATGTCATC	ATTAATAGCG
3001	GCAACCTTAC	CGCTGGAGGC	AATATTGTCA	ATATAGCCCG	AAATCTTACC
3051	GTTGAAAGTA	ACGCTAATTT	CAAAGCTATC	ACAAATTTCA	CTTTTAATGT
3101	AGGCGGCTTG	TTTGACAACA	AAGCAATTC	AAATATTTC	ATTGCCAAAG
3151	GAGGGGCTCG	CTTTAAAGAC	ATTGATAATT	CCAAGAATTT	AAGCATCACC
3201	ACCAACTCCA	GCTCCACTTA	CCGCACTATT	ATAAGCGGCA	ATATAACCAA
3251	TAAAAACGGT	GATTAAATA	TTACGAACGA	AGGTAGTGAT	ACTGAAATGC

FIG. 6F.

3301	AAATTGGCGG	CGATGTCTCG	CAAAAGAAG	GTAATCTCAC	GATTCTTCT
3351	GACAAAATCA	ATATTACCA	ACAGATAACA	ATCAAGGCAG	GTGTTGATGG
3401	GGAGAAATCC	GATTCAGACG	CGACAAACAA	TGCCAATCTA	ACCATTAATAA
3451	CCAAAGAATT	GAAATTAACG	CAAGACCTAA	ATATTTCAGG	TTTCAATAATAA
3501	GCAGAGATTA	CAGCTAAAGA	TGGTAGTGAT	TTAACTATTG	GTAACACCAA
3551	TAGTGCTGAT	GGTACTAATG	CCAAAAAAGT	AACCTTTAAC	CAGGTTAAAG
3601	ATTCAAAAAT	CTCTGCTGAC	GGTCACAAGG	TGACACTACA	CAGCAAAAGTG
3651	GAACACATCCG	GTAGTAATAA	CAACACTGAA	GATAGCAGTG	ACAATAATGC
3701	CGGCTTAAC	ATCGATGCAA	AAAATGTAAC	AGTAAACAAC	AAATATTACTT
3751	CTCACAAAGC	AGTGAGCATC	TCTGCGACAA	GTGGAGAAAT	TACCACTAAA
3801	ACAGGTACAA	CCATTAAACG	AACCACTGGT	AACGTGGAGA	TAACCGCTCA
3851	AACAGGTAGT	ATCCTAGGTG	GAATTGAGTC	CAGCTCTGGC	TCTGTAACAC
3901	TTACTGCAAC	CGAGGGCGCT	CTTGCTGTAA	GCAATATTTC	GGGCAACACC
3951	GTTACTGTTA	CTGCAAAATAG	CGGTGCATTA	ACCACTTTGG	CAGGCTCTAC
4001	AATTAAAGGA	ACCGAGAGTG	TAACCACTTC	AAGTCAATCA	GGCGATATCG
4051	GCGGTACGAT	TTCTGGTGGC	ACAGTAGAGG	TTAAAGCAAC	CGAAAGTTTA

FIG. 6F.

4101	ACCACTCAAT	CCAATTCAA	AATTAAAGCA	ACAACAGCG	AGGCTAACGT
4151	AACAAGTGA	ACAGGTACAA	TTGGTGGTAC	GATTCCGGT	AATACGGTAA
4201	ATGTTACGG	AAACGCTGGC	GATTTAACAG	TTGGGAATGG	CGCAGAAATT
4251	AATGCGACAG	AAGGAGCTGC	AACCTTAACT	ACATCATCG	GCAAATTAAAC
4301	TACCGAAGCT	AGTTCACACA	TTACTTTCAGC	CAAGGGTCAG	GTAATCTTTT
4351	CAGCTCAGGA	TGGTAGCGTT	GCAGGAAGTA	TTAATGCCGC	CAATGTGACA
4401	CTAAATACTA	CAGGCACTTT	AACTACCGTG	AAGGGTTCAA	ACATTAATGC
4451	AACCAGCGGT	ACCTTGGTTA	TTAACGCCAA	AGACGCTGAG	CTAAATGGCG
4501	CAGCATTGGG	TAACCACACA	GTGGTAAATG	CAACCAACGC	AAATGGCTCC
4551	GGCAGCGTAA	TCGGGACAA	CTCAAGCAGA	GTGAACATCA	CTGGGGATT
4601	AATCACAAATA	AATGGATTAA	ATATCATTTT	AAAAAACGGT	ATAAACACCG
4651	TACTGTTAAA	AGCGGTTAAA	ATTGATGTGA	AATACATTCA	ACCGGGTATA
4701	GCAAGCGTAG	ATGAAGTAAT	TGAAGCGAAA	CGCATCCTTG	AGAAGGTAAA
4751	AGATTTATCT	GATGAAGAAA	GAGAAGCGTT	AGCTAAACTT	GGCGTAAGTG
4801	CTGTACGTTT	TATTGAGCCA	AATAATACAA	TTACAGTCGA	TACACAAAAT
4851	GAATTTGCAA	CCAGACCAT	AAGTCGAATA	GTGATTCTTG	AAGGCAGGGC
4901	GTGTTTCTCA	AACAGTGATG	GCGCGACGGT	GTGCGTTAAT	ATCGCTGATA

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4951	ACGGCGGTA	GCGTCAGTA	ATTGACAAGG	TAGATTTCA	CCTGCAATGA
5001	AGTCATTTTA	TTTTTCGTATT	ATTTACTGTG	TGGGTTAAAG	TTCAGTACGG
5051	GCTTTACCCA	TCTTGTA AAA	AATTACGGAG	AATACAATAA	AGTATTTT
5101	ACAGGTTATT	ATTATGAAAA	ATATAAAAAG	CAGATTAAAA	CTCAGTGCAA
5151	TATCAGTATT	GCTTGGCCTG	GCTTCTTCAT	CATTGTATGC	AGAAGAAGCG
5201	TTTTTTAGTAA	AAGCCTTTCA	GTTATCTGGT	GCACTTGAAA	CTTTAAGTGA
5251	AGACGCCCAA	CTGTCTGTAG	CAAAATCTTT	ATCTAAATAC	CAAGGCTCGC
5301	AAACTTTAAC	AAACCTAAAA	ACAGCACAGC	TTGAATTACA	GGCTGTGCTA
5351	GATAAGATTG	AGCCAAAATAA	GTTTGATGTG	ATATTGCCAC	AACAAACCAT
5401	TACGGATGGC	AATATTATGT	TTGAGCTAGT	CTCGAAATCA	GCCGCAGAAA
5451	GCCAAAGTTT	TTATAAGGCG	AGCCAGGGTT	ATAGTGAAGA	AAATATCGCT
5501	CGTAGCCTGC	CATCTTTGAA	ACAAGGAAAA	GTGTATGAAG	ATGGTCGTCA
5551	GTGGTTCGAT	TTGCGTGAAT	TCAATATGGC	AAAAGAAAAA	CCACTTAAAG
5601	TCACTCGCGT	GCATTACGAG	TTAAACCCCTA	AAAACAAAAA	CTCTGATTTG
5651	GTAGTTGCAG	GTTTTTTCGCC	TTTTTGGCAA	ACGCGTAGCT	TTGTTTCCCTA
5701	TGATAATTTC	GGCGCAAGGG	AGTTTAACTA	TCAACGTGTA	AGCTAGGTT

FIG. 6H.

5751	TTGTA AATGC	CAATTGACC	GGACATGATG	ATGTATTAAA	TCTAAACGCA
5801	TTGACCAATG	TAAAGCACC	ATCAAAATCT	TATGCGGTAG	GCATAGGATA
5851	TACTTATCCG	TTTTATGATA	AACACCAATC	CTTAAGTCTT	TATACCAGCA
5901	TGAGTTATGC	TGATTCTAAT	GATATCGACG	GCTTACCAAG	TGCGATTAAAT
5951	CGTAAATTAT	CAAAGGTCA	ATCTATCTCT	GCGAATCTGA	AATGGAGTTA
6001	TTATCTCCCG	ACATTTAACC	TTGGAATGGA	AGACCAGTTT	AAAATTAATT
6051	TAGGCTACAA	CTACCGCCAT	ATTAATCAAA	CATCCGAGTT	AAACACCCCTG
6101	GGTGCAACGA	AGAAAAAATT	TGCAGTATCA	GGCGTAAGTG	CAGGCATTGA
6151	TGGACATATC	CAATTTACCC	CTAAAACAAT	CTTTAATATT	GATTTAATCTC
6201	ATCATTTATTA	CGCGAGTAAA	TTACCAGGCT	CTTTTGGAAT	GGAGCGCATT
6251	GGCGAAACAT	TTAATCGCAG	CTATCACATT	AGCACAGCCA	GTTAGGGTT
6301	GAGTCAAGAG	TTTGCTCAAG	GTTGGCATTT	TAGCAGTCAA	TTATCGGGTC
6351	AGTTTACTCT	ACAAGATATA	AGTAGCATAG	ATTATTTCTC	TGTAACAGGT
6401	ACTTATGGCG	TCAGAGGCTT	TAAATACGGC	GGTGCAAGTG	GTGAGCGCGG
6451	TCTTGTTATGG	CGTAATGAAT	TAAGTATGCC	AAAATACACC	CGCTTTCAAA
6501	TCAGCCCTTA	TGCGTTTTAT	GATGCAGGTC	AGTTCCGTTA	TAATAGCGAA
6551	AATGCTAAAA	CTTACGGCGA	AGATATGCAC	ACGGTATCCT	CTGCGGGTTT

FIG. 61.

6601	AGGCATTAAA	ACCTCTCCTA	CACAAAACCTT	AAGCTTAGAT	GCTTTTGTTC
6651	CTCGTCGCTT	TGCAAAATGCC	AATAGTGACA	ATTGGAATGG	CAACAAAAAA
6701	CGCACAAAGCT	CACCTACAAC	CTTCTGGGGT	AGATTAACAT	TCAGTTTCTA
6751	ACCCCTGAAAT	TTAATCAACT	GGTAAGCGTT	CCGCCTACCA	GTTTATAACT
6801	ATATGCTTTA	CCCGCCAATT	TACAGTCTAT	ACGCAACCCT	GTTTTCATCC
6851	TTATATATCA	AACAAACTAA	GCAAACCAAG	CAAACCAAGC	AAACCAAGCA
6901	AACCAAGCAA	ACCAAGCAAA	CCAAGCAAAC	CAAGCAAACC	AAGCAAAACCA
6951	AGCAAACCAA	GCAAACCAAG	CAAACCAAGC	AAACCAAGCA	ATGCTAAAAA
7001	ACAATTTATA	TGATAAACTA	AAACATACTC	CATACCATGG	CAATACAAGG
7051	GATTTAATAA	TATGACAAAA	GAAAAATTAC	AAAGTGTTCC	ACAAAAATACG
7101	ACCGCTTCAC	TTGTAGAATC	AAACAACGAC	CAAACCTCCC	TGCAAAATACT
7151	TAAACAACCA	CCCAAACCCA	ACCTATTACG	CCTGGAACAA	CATGTCGCCA
7201	AAAAAGATTA	TGAGCTTGCT	TGCCCGCGAAT	TAATGGCGAT	TTTGGA AAAA
7251	ATGGACGCTA	ATTTTGGAGG	CGTTCACGAT	ATTGAATTG	ACGCACCTGC
7301	TCAGCTGGCA	TATCTACCCG	AAAACTACT	AATTCATTT	GCCACTCGTC
7351	TCGCTAATGC	AATTACAACA	CTCTTTTCCG	ACCCCGAATT	GGCAATTTC

FIG. 6J.

7401 GAAGAAGGG CATTAAGAT GATTAGCCTG CAACGCTGGT TGACGCTGAT
7451 TTTTGCCCTCT TCCCCCTACG TTAACGCAGA CCATATTCTC AATAAATATA
7501 ATATCAACCC AGATTCCGAA GGTGGCTTTC ATTTAGCAAC AGACAACTCT
7551 TCTATTGCTA AATTCTGTAT TTTTACTTA CCCGAATCCA ATGTCAATAT
7601 GAGTTTAGAT GCGTTATGGG CAGGGAATCA ACAACTTTGT GCTTCATTGT
7651 GTTTTGCGTT GCAGTCTTCA CGTTTATTG GTA CTGCATC TCGGTTTCAT
7701 AAAAGAGCGG TGGTTTACA GTGGTTTCC T AAAAACTCG CCGAAATTGC
7751 TAATTTAGAT GAATTGCCCTG CAAATATCCT TCATGATGTA TATATGCACT
7801 GCAGTTATGA TTTAGCAAAA AACAAGCACG ATGTTAAGCG TCCATTAAAC
7851 GAACTTGTC GCAAGCATAT CCTCACGCAA GGATGGCAAG ACCGCTACCT
7901 TTACACCTTA GGTAAAAAGG ACGGCAAACC TGTGATGATG GTACTGCTTG
7951 AACATTTTAA TTCGGGACAT TCGATTTATC GCACGCATTC AACTTCAATG
8001 ATTGCTGCTC GAGAAAAATT CTATTTAGTC GGCTTAGGCC ATGAGGGCGT
8051 TGATAACATA GTTCGAGAAG TGT TTGACGA GTTCTTTGAA ATCAGTAGCA
8101 ATAATATAAT GGAGAGACTG TTTT TTATCC GTAAACAGTG CGAAACTTTC
8151 CAACCCGCAG TGTTCATAT GCCAAGCATT GGCATGGATA TTACCACGAT

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FIG. 6K.

8201	TTTTGTGAGC	AACACTCGGC	TTGCCCCCTAT	TCAAGCTGTA	GCCTTGGGTC
8251	ATCCTGCCAC	TACGCATTCT	GAATTATTG	ATTATGTCAT	CGTAGAAGAT
8301	GATTATGTGG	GCAGTGAAGA	TTGTTTAGC	GAAACCCCTT	TACGCTTACC
8351	CAAAGATGCC	CTACCTTTATG	TACCATCTGC	ACTCGCCCCA	CAAAAAGTGG
8401	ATTATGTACT	CAGGAAAAC	CCTGAAGTAG	TCAATATCGG	TATTGCCGCT
8451	ACCACAATGA	AATTAAACCC	TGAATTTTG	CTAACATTGC	AAGAAATCAG
8501	AGATAAAGCT	AAAGTCAAAA	TACATTTTCA	TTTCGCACTT	GGACAATCAA
8551	CAGGCTTGAC	ACACCCTTAT	GTCAAATGGT	TTATCGAAAG	CTATTTAGGT
8601	GACGATGCCA	CTGCACATCC	CCACGCACCT	TATCACGATT	ATCTGGCAAT
8651	ATTGCCGTGAT	TGCGATATGC	TACTAAATCC	GTTTCCTTC	GGTAATACTA
8701	ACGGCATAAT	TGATATGGTT	ACATTAGGTT	TAGTTGGTGT	ATGCAAAACG
8751	GGGGATGAAG	TACATGAACA	TATTGATGAA	GGTCTGTTTA	AACGCTTAGG
8801	ACTACCAGAA	TGGCTGATAG	CCGACACACG	AGAAACATAT	ATTGAATGTG
8851	CTTTGCGTCT	AGCAGAAAAC	CATCAAGAAC	GCCTTGAAC	CCGTCGTAC
8901	ATCATAGAAA	ACAACGGCTT	ACAAAAGCTT	TTTACAGGCG	ACCCTCGTCC
8951	ATTGGGCAAA	ATACTGCTTA	AGAAAACAAA	TGAATGGAAG	CGGAAGCACT
9001	TGAGTAAAAA	ATAACGGTTT	TTTAAAGTAA	AAGTGGGGTT	AATTTTCAAA

FIG. 6L.

9051 GCGTTTAA AACTCTCAA AAATCAACCG CACTTTATC TTTATAACGC
9101 TCCCGCGCGC TGACAGTTTA TCCTTTCTT AAAATACCCA TAAAATTGTG
9151 GCAATAGTTG GGTAATCAAA TTCAATTGTT GATACGGCAA ACTAAAGACG
9201 GCGGTTCTT CGGCAGTCAT C

FIG. 7A.

1	CGCCACTTCA	ATTTTGGATT	GTTGAAATTC	AACTAACCAA	AAAGTGCGGT
51	TAAAATCTGT	GGAGAAAATA	GGTGTAGTG	AAGAACGAGG	TAAATGTTCA
101	AAAGGATAAA	GCTCTCTTAA	TTGGGCATTG	GTTGGCGTTT	CTTTTTCGGT
151	TAATAGTAAA	TTATATTCTG	GACGACTATG	CAATCCACCA	ACAAC TTAC
201	CGTTGGTTT	AAGCGTTAAT	GTAAGTTCTT	GCTCTTCTTG	GCGAATACGT
251	AATCCCATTT	TTTGTTTAGC	AAGAAAATGA	TCGGGATAAT	CATAATAGGT
301	GTTGCCCAA	AATAAATTTT	GATGTTCTAA	AATCATAAAT	TTTGCAAGAT
351	ATTGTGGCA	TTCAATACCT	ATTGTGGCG	AAATCGCCAA	TTTTAATTCA
401	ATTCTTGTA	GCATAATATT	TCCCAC TCA	ATCAACTGGT	TAAATATACA
451	AGATAATAAA	AATAAATCAA	GATTTTGTG	ATGACAAACA	ACAATTACAA
501	CACCTTTTTT	GCAGTCTATA	TGCAAAATATT	TTAAAAAAAT	AGTATAAATC
551	CGCCATATAA	AATGGTATAA	TCTTTCATCT	TTTCATCTTTC	ATCTTTCATC
601	TTTCATCTTT	CATCTTTCAT	CTTTCATCTT	TCATCTTTCA	TCTTTCATCT
651	TTCATCTTTC	ATCTTTCATC	TTTTCATCTTT	CACATGAAAT	GATGAACCGA
701	GGGAAGGAG	GGAGGGGCAA	GAATGAAGAG	GGAGCTGAAC	GAACGCAAAT
751	GATAAAGTAA	TTTAATTGTT	CAACTAACCT	TAGGAGAAAA	TATGAACAAG

FIG. 7B.

801 ATATATCGTC TCAAATTTCAG CAAACGCCCTG AATGCTTTGG TTGCTGTGTC
851 TGAATTGGCA CGGGGTTGTG ACCATTCCAC AGAAAAAGGC AGCGAAAAAC
901 CTGCTCGCAT GAAAGTGCGT CACTTAGCGT TAAAGCCACT TTCCGCTATG
951 TTAATACTTT TAGGTGTAAC ATCTATTCCA CAATCTGTTT TAGCAAGCGG
1001 CAATTTAACA TCGACCAAAA TGAATGGTG CAGTTTTTAC AAGAAAAACAA
1051 GTAATAAAAC CATTATCCGC AACAGTGTTG ACGCTATCAT TAATTGGAAA
1101 CAATTTAACA TCGACCAAAA TGAATGGTG CAGTTTTTAC AAGAAAAACAA
1151 CAACTCCGCC GTATTCAACC GTGTTACATC TAACCAAAATC TCCCAATTAA
1201 AAGGGATTTT AGATTCTAAC GGACAAGTCT TTTTAATCAA CCCAAATGGT
1251 ATCACAAATAG GTAAAGACGC AATTATTAACT ACTAATGGCT TTACGGCTTC
1301 TACGCTAGAC ATTTCTAACG AAAACATCAA GGCGCGTAAT TTCACCTTCG
1351 AGCAAACCAA AGATAAAGCG CTCGCTGAAA TTGTGAATCA CGGTTTAATT
1401 ACTGTCGGTA AAGACGGCAG TGTAATACTTT ATTGGTGGCA AAGTGAAAAA
1451 CGAGGGTGTG ATTAGCGTAA ATGGTGGCAG CATTCTTTA CTCGCAGGGC
1501 AAAAAATCAC CATCAGCGAT ATAATAAACC CAACCATTAC TTACAGCATT
1551 GCCGCGCCTG AAAATGAAGC GGTCAATCTG GCGATATTT TTGCCAAAGG

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FIG. 7C.

1601 CCGTAACATT AATGTCCGTG CTGCCACTAT TCGAAACCAA GGTAAACTTT
1651 CTGCTGATTC TGTAAGCAAA GATAAAGCG GCAATATGT TCTTCCGCC
1701 AAAGAGGGTG AAGCGGAAAT TGGCGGTGTA ATTTCCGCTC AAAATCAGCA
1751 AGCTAAAGGC GGCAAGCTGA TGATTACAGG CGATAAAGTC ACATTAAAA
1801 CAGGTGCAGT TATCGACCCTT TCAGGTAAAG AAGGGGAGA AACTTACCCTT
1851 GGCGGTGACG AGCGCGGCGA AGGTAAAAAC GGCAATCAAT TAGCAAAAGAA
1901 AACCTCTTTA GAAAAAGGCT CAACCATCAA TGTATCAGGC AAAGAAAAAG
1951 GCGGACGCGC TATTGTGTGG GCCGATATTG CGTTAATTGA CGCAATATT
2001 AACGCTCAAG GTAGTGTGA TATCGCTAAA ACCGGTGGTT TTGTGGAGAC
2051 ATCGGGGCAT TATTATCCA TTGACAGCAA TGCAATTGTT AAAACAAAAG
2101 AGTGGTTGCT AGACCCCTGAT GATGTAACAA TTGAAGCCGA AGACCCCTT
2151 CGCAATAATA CCGGTATAAA TGATGAATTC CCAACAGGCA CCGGTGAAGC
2201 AAGCGACCCCT AAAAAAATA GCGAACTCAA AACAAACGCTA ACCAATACAA
2251 CTATTTCAAA TTATCTGAAA AACGCCCTGA CAATGAATAT AACGGCATCA
2301 AGAAAACTTA CCGTTAATAG CTCAATCAAC ATCGGAAGCA ACTCCCACTT
2351 AATTCTCCAT AGTAAAGGTC AGCGTGGCGG AGGCGTTCAG ATTGATGGAG
2401 ATATTACTTC TAAAGCGGGA AATTTAACCA TTTATTCTGG CCGATGGGTT

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FIG. 7D.

2451	GATGTTTCATA	AAAATATTAC	GCTTGATCAG	GGTTTTTAA	ATATTACCGC
2501	CGCTTCCGTA	GCTTTTGAAG	GTGAAATAA	CAAAGCACGC	GACGCGGCAA
2551	ATGCTAAAAAT	TGTCGCCCCAG	GGCACTGTAA	CCATTACAGG	AGAGGGA AAA
2601	GATTTCAGGG	CTAACAAACGT	ATCTTTAAAC	GGAACGGTA	AAGTCTGAA
2651	TATCATTTCA	TCAGTGAATA	ATTTAAACCA	CAATCTTAGT	GGCACAAATTA
2701	ACATATCTGG	GAATATAACA	ATTAACCAAA	CTACGAGAAA	GAACACCTCG
2751	TATTGGCAA	CCAGCCATGA	TTCGCACTGG	AACGTCAGTG	CTCTTAATCT
2801	AGAGACAGGC	GCAAATTTTA	CCTTTATTAA	ATACATTTCA	AGCAATAGCA
2851	AAGGCTTAAC	AACACAGTAT	AGAAGCTCTG	CAGGGGTGAA	TTTTAACGGC
2901	GTAAATGGCA	ACATGTCATT	CAATCTCAA	GAAGGAGCGA	AAGTTAAATT
2951	CAAATTA AAA	CCAAACGAGA	ACATGAACAC	AAGCAAACCT	TTACCAATTC
3001	GGTTTTTAGC	CAATATCACA	GCCACTGGTG	GGGGCTCTGT	TTTTTTTGTAT
3051	ATATATGCCA	ACCATTCCTGG	CAGAGGGGCT	GAGTTAAAAA	TGAGTGAAAT
3101	TAAATATCTCT	AACGGCGCTA	ATTTTACCTT	AAATTCCCAT	GTTCGGGGCG
3151	ATGACGCTTT	TAAAAATCAAC	AAAGACTTAA	CCATAAATGC	AACCAATTCA
3201	AATTTCAGCC	TCAGACAGAC	GAAAGATGAT	TTTTTATGACG	GTACGCCACG

3251	CAATGCCATC	AATTCAACCT	ACAACATATC	CATTCTGGGC	GGTAATGTCA
3301	CCCTTGGTGG	ACAAAACTCA	AGCAGCAGCA	TTACGGGGAA	TATTAATATC
3351	GAGAAAGCAG	CAAATGTTAC	GCTAGAAGCC	AATAACGCCC	CTAATCAGCA
3401	AAACATAAGG	GATAGAGTTA	TAAAACTTGG	CAGCTTGCTC	GTTAATGGGA
3451	GTTTAAAGTTT	AACTGGCGAA	AATGCAGATA	TTAAAGGCAA	TCTCACTATT
3501	TCAGAAAGCG	CCACTTTTAA	AGGAAAGACT	AGAGATACCC	TAAATATCAC
3551	CGGCAATTTT	ACCAATAATG	GCACTGCCGA	AATTAATATA	ACACAAGGAG
3601	TGGTAAAACT	TGGCAATGTT	ACCAATGATG	GTGATTTAAA	CATTACCACT
3651	CACGCTAAAC	GCAACCAAAG	AAGCATCATC	GGCGGAGATA	TAATCAACAA
3701	AAAAGGAAGC	TTAAATATTA	CAGACAGTAA	TAATGATGCT	GAAATCCAAA
3751	TTGGCGGCAA	TATCTCGCAA	AAAGAAGGCA	ACCTCACGAT	TTCTTCCGAT
3801	AAAATTAATA	TCACCAAACA	GATAACAATC	AAAAGGGTA	TTGATGGAGA
3851	GGACTCTAGT	TCAGATGCCA	CAAGTAATGC	CAACCTAACT	ATTAAAACCA
3901	AAGAATTGAA	ATTGACAGAA	GACCTAAGTA	TTTCAGGTTT	CAATAAAGCA
3951	GAGATTACAG	CCAAAGATGG	TAGAGATTTA	ACTATTGGCA	ACAGTAATGA
4001	CGGTAACAGC	GGTGCCGAAG	CCAAAACAGT	AACTTTTAAAC	AATGTTAAAG

FIG. 7F.

4051	ATTCAAAAAT	CTCTGCTGAC	GGTCACAATG	TGACACTAAA	TAGCAAAAGTG
4101	AAAACATCTA	GCAGCAATGG	CGGACGTGAA	AGCAATAGCG	ACAACGATAC
4151	CGGCTTAACT	ATTACTGCAA	AAAATGTAGA	AGTAAACAAA	GATATTACTT
4201	CTCTCAAAAC	AGTAAATATC	ACCGCGTCGG	AAAAGGTTAC	CACCACAGCA
4251	GGCTCGACCA	TTAACGCAAC	AAATGGCAAA	GCAAGTATTA	CAACCAAAAC
4301	AGGTGATATC	AGCGGTACGA	TTTCCGGTAA	CACGGTAAGT	GTTAGCGCGA
4351	CTGGTGATTT	AACCACTAAA	TCCGGCTCAA	AAATTGAAGC	GAAATCGGGT
4401	GAGGCTAATG	TAACAAGTGC	AACAGGTACA	ATTGGCGGTA	CAATTTCCTG
4451	TAATACGGTA	AATGTTACGG	CAAACGCTGG	CGATTTAACA	GTGGGAATG
4501	GCGCAGAAAT	TAATGCGACA	GAAGGAGCTG	CAACCTTAAC	CGCAACAGGG
4551	AATACCTTGA	CTACTGAAGC	CGGTTCTAGC	ATCACTTCAA	CTAAGGGTCA
4601	GGTAGACCTC	TTGGCTCAGA	ATGGTAGCAT	CGCAGGAAGC	ATTAATGCTG
4651	CTAATGTGAC	ATTAAAATACT	ACAGGCACCT	TAACCACCGT	GGCAGGCTCG
4701	GATATTAAAG	CAACCAGCGG	CACCTTGGTT	ATTAACGCAA	AAGATGCTAA
4751	GCTAAATGGT	GATGCATCAG	GTGATAGTAC	AGAAGTGAAT	GCAGTCAACG
4801	ACTGGGGATT	TGGTAGTGTG	ACTGCGGCAA	CCTCAAGCAG	TGTGAATATC
4851	ACTGGGGATT	TAAACACAGT	AAATGGGTTA	AATATCATTT	CGAAAGATGG

FIG. 7G:

4901	TAGAAACACT	GTGCGCTTAA	GAGGCAAGGA	AATTGAGGTG	AAATATATCC
4951	AGCCAGGTGT	AGCAAGTGTA	GAAGAAGTAA	TTGAAGCGAA	ACGCGTCCTT
5001	GAAAAAGTAA	AAGATTTATC	TGATGAAGAA	AGAGAAACAT	TAGCTAAACT
5051	TGGTGTAAGT	GCTGTACGTT	TTGTTGAGCC	AAATAATACA	ATTACAGTCA
5101	ATACACAAAA	TGAATTTACA	ACCAGACCGT	CAAGTCAAGT	GATAATTTCT
5151	GAAGGTAAGG	CGTGTTTCTC	AAGTGGTAAT	GGCGCACGAG	TATGTACCAA
5201	TGTTTGCTGAC	GATGGACAGC	CGTAGTCAGT	AATTGACAAG	GTAGATTTCA
5251	TCCTGCAATG	AAGTCATTTT	ATTTTCGTAT	TATTTACTGT	GTGGGTTAAA
5301	G TTCAGTACG	GGCTTTACCC	ATCTTGTA AA	AAATTACGGA	GAATACAATA
5351	AAGTATTTT	AACAGGTTAT	TATTATGAAA	AAATAAAAA	GCAGATTAAA
5401	ACTCAGTGCA	ATATCAGTAT	TGCTTGGCCT	GGCTTCTTCA	TCATTGTATG
5451	CAGAAAGAAGC	GTTTTTAGTA	AAAGGCTTTC	AGTTATCTGG	TGCACCTGAA
5501	ACTTTAAGTG	AAGACGCCCA	ACTGTCTGTA	GCAAAATCTT	TATCTAAATA
5551	CCAAGGCTCG	CAAACTTTAA	CAAACCTAAA	AACAGCACAG	CTTGAATTAC
5601	AGGCTGTGCT	AGATAAGATT	GAGCCAAATA	AATTTGATGT	GATATTGCCG
5651	CAACAAACCA	TTACGGATGG	CAATATCATG	TTTGAGCTAG	TCTCGAAATC

(The following are the names of the individuals who have been identified as having been involved in the investigation.)

[illegible]

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FIG. 7J.

7451	TTGGAGGCGT	TCACGATATT	GAATTGACG	CACCCGCTCA	GCTGGCATAT
7501	CTACCCGAAA	AATACTAAT	TTATTTGCC	ACTCGTCTCG	CTAATGCAAT
7551	TACAACACTC	TTTTCCGACC	CCGAATTGGC	AATTCTGAA	GAAGGGCGGT
7601	TAAAGATGAT	TAGCCTGCAA	CGCTGGTTGA	CGCTGATTTT	TGCCCTCTTCC
7651	CCCTACGTTA	ACGCAGACCA	TATTCCTCAAT	AAATATAATA	TCAACCCAGA
7701	TTCCGAAGGT	GGCTTTCATT	TAGCAACAGA	CAACTCTTCT	ATTGCTAAAT
7751	TCCTGTATTT	TTACTTACCC	GAATCCAATG	TCAATATGAG	TTTAGATGCG
7801	TTATGGGCAG	GGAATCAACA	ACTTTGTGCT	TCATTGTGTT	TTGCGTTGCA
7851	GTCTTCACGT	TTTATTGGTA	CCGCATCTGC	GTTTCATAAA	AGAGCGGTGG
7901	TTTTACAGTG	GTTTCCTAAA	AAACTCGCCG	AAATTGCTAA	TTTAGATGAA
7951	TTGCCCTGCAA	ATATCCTTCA	TGATGTATAT	ATGCACTGCA	GTTATGATTT
8001	AGCAAAAAC	AAGCACGATG	TTAAGCGTCC	ATTAAACGAA	CTTGTCCTCGCA
8051	AGCATATCCT	CACGCAAGGA	TGGCAAGACC	GCTACCTTTA	CACCTTAGGT
8101	AAAAAGGACG	GCAAACCTGT	GATGATGGTA	CTGCTTGAAC	ATTTTAATTC
8151	GGGACATTGG	ATTATCGTA	CACATTCAAC	TTCAATGATT	GCTGCTCGAG
8201	AAAAATTCTA	TTTAGTCGGC	TTAGGCCATG	AGGGCGTTGA	TAAAAATAGGT

FIG. 7K.

8251 CGAGAAGTGT TTGACGAGTT CTTGAAATC AGTAGCAATA ATATAATGGA
8301 GAGACTGTTT TTTATCCGTA AACAGTGCGA AACTTTCCAA CCCGCAGTGT
8351 TCTATATGCC AAGCATTGGC ATGGATATTA CCACGATTTT TGTGAGCAAC
8401 ACTCGGCTTG CCCCTATTCA AGCTGTAGCC CTGGGTCATC CTGCCACTAC
8451 GCATTCTGAA TTTATTGATT ATGTCATCGT AGAAGATGAT TATGTGGGCA
8501 GTGAAGATTG TTTCAGCGAA ACCCTTTTAC GCTTACCCAA AGATGCCCTA
8551 CCTTATGTAC CTTCTGCACT CGCCCCACAA AAAGTGGATT ATGTACTCAG
8601 GGAAAACCCCT GAAGTAGTCA ATATCGGTAT TGCCGCTACC ACAATGAAAT
8651 TAAACCCCTGA ATTTTGTCTA ACATTGCAAG AAATCAGAGA TAAAGCTAAA
8701 GTCAAAATAC ATTTTCATTT CGCACTTGA CAATCAACAG GCTTGACACA
8751 CCTTATGTC AAATGGTTTA TCGAAAGCTA TTAGGTGAC GATGCCACTG
8801 CACATCCCCA CGCACCTTAT CACGATTATC TGGCAATATT GCGTGATTGC
8851 GATATGCTAC TAAATCCGTT TCCTTTCGGT AATACTAACG GCATAATTGA
8901 TATGGTTACA TTAGGTTTAG TTGGTGTATG CAAAACGGGG GATGAAGTAC
8951 ATGAACATAT TGATGAAGGT CTGTTTAAAC GCTTAGGACT ACCAGAAATGG
9001 CTGATAGCCG ACACACGAGA AACATATATT GAATGTGCTT TCGCTCTAGC
9051 AGAAAACCAT CAAGAACGCC TTGAACTCCG TCGTTACATC ATAGAAAACA

FIG. 7L.

9101 ACGGCTTACA AAAGCTTTTT ACAGGCGACC CTCGTCCATT GGGCAAAATA
9151 CTGCTTAAGA AAACAAATGA ATGGAAGCGG AAGCACTGA GTAAAAAATA
9201 ACGGTTTTTT AAAGTAAAAG TCGGGTTAAT TTTCAAAGCG TTTTAAAAAC
9251 CTCCTCAAAA TCAACCGCAC TTTTATCTTT ATAACGATCC CGCACGCTGA
9301 CAGTTTATCA GCCTCCCGCC ATAAAACTCC GCCTTTCATG GCGAGATT
9351 TAGCCAAAC TGGCAGAAAT TAAAGGCTAA AATCACCAA TTGCACCACA
9401 AAATCACCAA TACCCACAAA AAA

FIG. 8A

1 ATGAACAAGA TATATCGTCT CAAATTCAGC AAAGCCCTGA ATGCTTTGGT
TCCTGTGTCT GAATTGACAC GGGGTGTGA CCATTCCACA GAAAAAGGCA
101 GTGAAAAACC TGTTCGTAG AAAGTACGCC ACTTGGCGTT AAAGCCACTT
TCCGCTATAT TGCTATCTTT GGGCATGGCA TCCATTCCGC AATCTGTTTT
201 ACCGAGCGGT TTACAGGGA TGAGCGTGT ACACGGTACA GCAACCATCC
AAGTAGACGG CAATAAAACC ACTATCCGTA ATAGCGTCAA TCCTATCATC
301 AATTGGAAC AATTTAACAT TGACCAAAAT GAAATGGTGC AGTTTTTACA
AGAAAGCAGC AACTCTGCCG TTTTCAACCG TCTTACATCT GACCAGATCT
401 CCCAATTAAA ACGGATTTTA GATTCTAAG GACAAGTCTT TTTAATCAAC
CCAAATGGTA TCACAATAGG TAAAGACGCA ATTATTACA CTAATGGCTT
501 TACTGCTTCT ACGCTAGACA TTTCTAACA AAACATCAAG GCGCGTAATT
TCACCCCTTGA GCAAAACCAAG GATAAAGCAC TCGCTGAAAT CGTCAATCAC
601 GGTTTAATTA CCGTTGGTAA AGACGGTAGC GTAAACCTTA TTGGTGGCAA
AGTGA AAAAC GAGCGCGTGA TTAGCGTAAA TCGCGGTAGT ATTTCATTAC
701 TTGCAGGGCA AAAAATCACC ATCAGCGATA TAATAATCC AACCATCACT
TACAGCATTG CTGCACCTGA AAACGAAGCG ATCAATCTCG GCGATATTTT

BB
GG
FF

801 TGCCAAAGGT GGTAAACATTA ATGTCCGGCG TCCCACTATT CGCAATAAAG
GTA AACCTTTC TGCCGACTCT GTAAGCAAAG ATAAAAGTGG TAACATTGTT

901 CTCTCTGCCA AAGAAGGTGA AGCGGAATTT GCGGGTGTA TTTCCGCTCA
AAATCAGCAA GCCAAAGGTG GTAAGTTCAT GATTACAGGC GATAAAGTTA

1001 CATTGAAAAC GGGTCCAGTT ATCGACCTTT CCGGTAAAGA AGCGCGAGAA
ACTTATCTTG GCGGTGACGA CCGTGGCGAA GGTAATAAAG GCATTCAATT

1101 ACCAAAGAAA ACCACTTTAG AAAAAGGCTC AACAAATTAAT GTGTGAGTTA
AAGAAAAGG TGGCGCGCT ATTGTATGGG GCGATATTTC GTTAATTGAC

1201 GGCAATATTA ATGCCCAAGG TAAAGATATC GCTAAAACTG GTGGTTTTGT
GGAGACGTGG GCGCATTTACT TATCCATTGA TGATAACCCA ATTGTTAAAA

1301 CAAAAGAATG GCTACTAGAC CCAGAGAATG TGACTATTGA AGCTCCTTCC
GCTTCTGGG TCGAGCTGGG TCCCGATAGG AATTCCACT CCGCAGAGGT

1401 GATAAAAGTG ACCCTAAAA AAAATAACAC CTCCTTGACA AACTAATCCA
ATACAACCAT TTCAAATCTT CTGAAAAGTG CCCACGTGCT GAACATAACG

1501 GCAAGGAGAA AACTTACCGT TAATAGCTCT ATCAGTATAG AAAGGGCTC
CCACTTAATT CTCACAGTG AAGTCAGG CCGTCAAGGT GTTCAGATTG

FIG. 8C

1601 ATAAAGATAT TACTTCTGAA GGCGGAAATT TAACCATTTA TTCTGCGCGA
 TGGGTTCATG TTCATAAAAA TATTACGCTT CGTAGCGGCT TTTTAAACAT

1701 CACAACATAA GAAGGAGATA TCGCCCTTCGA AGACAAGTCT GGACGGAACA
 ACCTAACCAT TACAGCCCAA GGGACCATCA CCTCAGGTAA TAGTAACGGC

1801 TTITAGATTTA ACAACGTCTC TCTAAACAGC CTTCGCGGAA AGCTGAGCCT
 TACTGACAGC AGAGAGGACA GAGGTAGAAG AACTAAGCGT AATAATCTCA

1901 ACAAAATTGA CGGAACGTTA AACATTTCCG GAACGTGAGA TATCTCAATG
 AAAGCACCCA AAGTCAGCTG GTTTTACAGA GACAAAGGAC GCACCTACTG

2001 GAACGTAACC ACTTTAAATG TTACCICGGG TAGTAAATTT AACCTCTCCA
 TTGACAGCAC AGGAAGTGGC TCAACAGGTC CAAGCATACG CAATGCAGAA

2101 TTAAATGGCA TAACATTTAA TAAAGCCACT TTTAATATCG CACAAGGCTC
 AACAGCTAAC TTITAGCATCA AGGCATCAAT AATGCCCTTT AAGAGTAACG

2201 CTAACCTACG ATTATTTAAT GAAGATATTT CAGTCTCAG GGGGGTAGC
 CTTAATTTCA AACTTAAGC CTCATCTAGC AACATACAAA CCCCTGGCGT

2301 AATTATAAAA TCTCAAAACT TTAATGTCIC AGGAGGTC ACTTTAAATC
 TCAAGGCTGA AGGTTCAACA GAAACCGCTT TTTCATATGA AAATCATTTA

FIG.8D

2401 AACTTTAAACG CCACCGGTGG CAATATAACA ATCAGACAAG TCGAGGGTAC
CGATTCAAGC GTCAACAAG GTGTGGCAGC CAAAAAAAC ATAACCTTTTA
2501 AAGGGGGTAA TATCACCTTC GGCCTCATAA AGCCACAAC AGAATCAAA
GGCAATGTTA CCATCAATAA AAACACTAAC GCTACTCTTT GTGGTGGAA
2601 TTTTGGCCGA AACAAATCGC CTTTAAATAT AGCAGGAAAT GTTATTATA
ATGGCAACCT TACCACCTGC GGTCCATT TCAATATAGC CGGAAATCTT
2701 ACTGTTTCAA AAGCGGCTAA CCTTCAAGCT ATAACAATTT ACACTTTTAA
TGTAGCCGCG TCATTTCACA ACAATGGCGC TTCAACATTT TCCATTGCCA
2801 GAGGAGCGGC TAAATTTTAA GATATCAATA ACACCAGTAG CTTAAATATT
ACCACCAACT CTGATACCAC TTACCGCACC ATTATAAAG GCAATATATC
2901 CAACAAATCA GGTGATTTGA ATATTATTGA TAAAAAAGC GACGCTGAAA
TCCAAATTGG CGGCAATATC TCACAATAAG AAGCAATCT CACAATTTCT
3001 TCTGATAAAG TAAATATTAC CAATCAGATA ACAATCAAAG CAGCGTTGA
ACGGGGCGGT TCTGATTCAA GTGAGGCAGA AAATGCTAAC CTAACATTC
3101 AAACCAAAGA GTTAAAAATTG GCAGGAGACC TAAATATTTC AGGCTTTAAT
AAACGAGAAA TTACAGCTAA AAATGGCAGT GATTTTAATA TTGCCAATGC

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11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

4001 ATATTGAAGG TACAATTTC TGGTAATACAG TAAATGTTAC AGCAAGCACT
GGTGATTTTAA CTATTGCGAAA TAGTCCAAAA GTTGAAGCGA AAAATGGAGC

4101 TCCAACCTTA ACTGCTGAAT CAGGCAAAAT AACCACCCAA ACAGGCTCTA
GCATTACCTC AAGCAATGGT CAGACAAC TC TTACAGCCAA GGATAGCAGT

4201 ATCGCAGGAA ACATTAAATG TCGTAATGTG ACGTTAAATA CCACAGGCAC
TTTAACTACT ACAGGGGATT CAAAGATTAA CGCAACCAGT GGTAACCTTAA

4301 CAATCAATGC AAAAGATGCC AAATTAGATG GTGCTGCATC AGGTACCCGC
ACAGTAGTAA ATGCAACTAA CGCAAGTGGC TCTGCTAACC TGA CTGCGAA

4401 AACCTCAAGC AGCGTGAATA TCACCCGGGA TTTAAACACA ATAAATGGGT
TAAATATCAT TTCCGAAAAT GGTAGAAAACA CTGTGCGCTT AAGAGCCGAG

4501 GAAATTGATG TGAATATAT CCAACCAGGT GTACCAAGCG TAGAAGAGGT
AATTGAAGCG AAACCGCTCC TTGAGAAGGT AAAAGATTTA TCTGATCAAG

4601 AAAGAGAAAC ACTAGCCAAA CTGGTGTAAG GTGCTGTACG TTTCGTTGAG
CCAAATAATG CCATTACGGT TAAATACAAA AACGAGTTTA CAACCAACC

4701 ATCAAGTCAA GTGACAATTT CTGAAGGTAA GCGGTGTTTC TCAAGTGGTA
ATGGCCGACG AGTATGTACC AATGTTGCTG ACGATCGACA GCAG

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1 ATGAACAAGA TATATCGTCT CAAATTTCAGC AAACGCCCTGA ATGCTTTTGGT
TGCTGTGTCT GAATTGACAC GGGGTGTGTA CCAATCCACA GAAAAAGGCA

101 GTGAAAAACC TGTTTCGTACG AAAGTACGCC ACTTGGCGTT AAAGCCACTT
TCCGCTATAT TCGTATCTTT GGGCATGGCA TCCATTCCGC AATCTGTTTT

201 AGCGAGCGGT TTACACGGAA TCACCGTCTGT ACACCGTACA GCAACCATGC
AAGTAGACCG CAATAAAACC ACTATCCGTA ATAGCGTCAA TCCTATCATC

301 AATTGGAAC AATTTAACAT TGACCAAAAT GAAATGGTGC AGTTTTTACA
AGAAAGCAGC AACTCTGCCG TTTTCAACCG TGTTACATCT GACCAAAATCT

401 CCCAATTAAA AGGATTTTAA GATTCTAAG GACAAGTCTT TTTAATCAAC
CCAAATGGTA TCACAATAGG TAAAGACGCA ATTATTAAACA CTAATGGCTT

501 TACTGCTTCT ACGCTAGACA TTTCTAACGA AAACATCAAG GCGGTAAAT
TCACCCCTTGA GCAAACCAAG GATAAAGCAC TCGCTCAAT CGTGAATCAC

601 GGTTTAATTA CCGTTGGTAA AGACGGTAGC GTAAACCTTA TTGGTGGCAA
AGTGAATAAC GAGCGCGTGA TTAGCGTAAA TGGCGGTAGT ATTCTTTTAC

701 TTGCAGGGCA AAAAATCACC ATCAGCGATA TAATAAATCC AACCATCACT
TACAGCATTG CTGCACCTGA AAACGAAGCG ATCAATCTCG GCGATATTTT

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801 TGCCAAAGGT GGTAACATTA ATGTCGGCGC TGCCACTATT CGCAATAAAG
GTAAACTTTC TGCCGACTCT GTAACCAAAG ATAAAAGTGG TAACATTGTT

901 CTCTCTGCCA AAGAAGGTGA AGCGGAAATT GCGCGTGTA TTTCCGCTCA
AAATCAGCAA GCCAAAGGTG GTAAGTTGAT GATTACAGGT GATAAAGTCA

1001 CATTAAAAAC AGGTCCAGTT ATCGACCTTT CAGGTAAAGA AGGGGGAGAG
ACTTATCTTG GCGGTGATGA CCGTCCGCAA GGTAAAAATG GTATTCAATT

1101 AGCGAAGAAA ACCTCTTTAG AAAAAGGCTC GACAATTAAT GTATCAGCCA
AAGAAAAAGG CGGGCCGCTT ATTGTATGGG GCGATATTGC ATTAATTAAT

1201 GGTAACATTA ATGCTCAAGG TAGCGATATT GCTAAAACTG GCGGCTTTGT
GGAAACATCA GGACATGACT TATCCATTGG TCATGATGTC ATTGTTGACG

1301 CTAAAGAGTG GTTATTAGAC CCAGATGATG TGTCCATTGA AACTCTTACA
TCTGGACGCA ATAATACCGG CGAAACCAA CGATATACAA CAGGAGATCG

1401 GACTAAAGAG TCACCTAAAG GTAATAGTAT TTCTAAACCT ACATTACAA
ACTCAACTCT TGAGCAAATC CTAACAAGAG GTTCTTATGT TAATATCACT

501 GCTAATAATA GAATTTATGT TAATAGCTCC ATCAACTTAT CTAATGGCAG
TTTTAACACTT CACACTAAAC GAGATCGAGT TAAAAATTAAC GGTGATATTA

FIG. 9C

1601 CCTCAAACGA AAATGGTAAT TTAACCATTA AAGCAGGCTC TTGGGTTCAT
GTTTCATAAAA ACATCAGCCT TGGTACGGGT TTTTTCGAATA TTGTGCGCTGG

1701 GGATTTCGTA GCTTTTCAGA GAGAGGGCGA TAAAGCACGT AACCCAACAG
ATGCTCAAAAT TACCGCACAA GCGACGATAA CCGTCAATAA AGATGATAAA

1801 CAATTTCAGT TCAATAATGT ATCTATTAACT GCGACGGCGA AGGGTTTAAA
GTTTATTGCA AATCAAAAATA ATTTCACATC TAAATTTCAT GCGCAAAATTA

1901 ACATATCTGG AATAGTAACA ATTAAACCAA CCACGAAAAA AGATGTATAA
TACTGGAATG CATCAAAAAGA CTCTTACTGG AATGTTTCTT CTCTTACTTT

2001 GAATACGGTG CAAAAATTTA CCTTTATAAA ATTGCTTCAT AGCGGCTCAA
ATTCCCAAGA TTTCAGGTCA TCACGTAGAA GTTTTCAGG CGTACATTTT

2101 AACGGCATCG GAGCCAAAAC AAACCTTCAAC ATCGGAGCTA ACCCAAAAGC
CTTATTTTAA TTAAAACCAA ACGCCGCTAC AGACCCAAAA AAAGAATTAC

2201 CTATTACTTT TAACGCCAAC ATTACAGCTA CCGGTAACAG TGATAGCTCT
GTGATGTTTG ACATACAGCC CAATCTTACC TCTAGAGCTG CCGGCATAAA

301 CATGGATTCA ATTAACATTA CCGCGGGGCT TGACTTTTTC ATAACATCCC
ATAATCGCAA TAGTAATGCT TTTCGAAATCA AAAAGACATT AACTATAAAT

FIG.9D

2401 GCAACTGGCT CGAATTTTAG TCTTAACCAA ACGAAAGATT CTTTTATAA
TGAATACAGC AACACGCCA TTAACCTCAAG TCATAATCTA ACCATICTTG
2501 GCGGCAATGT CACTCTAGGT GGGGAAAATT CAAGCAGTAG CATTACGGCC
AATATCAATA TCACCAATAA AGCAAATGTT ACATTACAAG CTGACACCCAG
2601 CAACAGCAAC ACAGGCTTGA AGAAAAGAAC TCTAACTCTT GGCAATATAT
CTGTTCAGCG GAATTTAAGC CTAACCTGGTG CAAATGCAA CATTCGCGCC
2701 AATCTTTCTA TTGCAGAAGA TTCCACATTT AAAGGAGAAG CCAGTGACAA
CCTAAACATC ACGGCACCT TTACCAACAA CCGTACCGCC AACATTAATA
2801 TAAACAAGG AGTGGTAAAA CTCCAAGCG ATATTATCAA TAAAGTGGT
TTAAATATCA CTACTAAGC CTCAGGCACT CAAAAAACA TTATTAAACGG
2901 AAATATAACT AACGAAAAAG GCGACTTAA CATCAAGAAT ATTAAAGCCG
ACCGCGAAAT CCAAAATGGC GGCAATATCT CACAAAAGA AGCCAATCTC
001 ACAATTTCTT CTGATAAAGT AAATATTACC AATCAGATAA CAATCAAAGC
AGCGGTGAA GGGGGCGGT CTGATTCAAG TGAGGCAGAA AATCCTAAC
101 TAACTATTCA AACCAAGAG TTAAATTTGG CAGGAGACCT AAATATTCA
GGCTTTAATA AAGCAGAAAT TACAGCTAAA AATGCCAGTG ATTTAACTAT
201 TGGCAATGCT AGCGGTGGTA ATGCTGATCC TAAAAAAGTG ACTTTTGACA
AGGTTAAAGA TTCAAAAATC TCGACTGACG GTCACAATGT AACACTAAAT

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AAAAAAAAAAAAAAAA

3301 AGCGAAGTGA AAACGTCTAA TGGTAGTAGC AATGCTGGTA ATCATAAACAG
CACCGGTTTA ACCATTTCGG CAAAAGATGT AACGGTAAAC AATAACGTTA

3401 CCTCCCCACAA GACAATAAAT ATCTCTGCCG CAGCAGGAAA TGTAACAACC
AAAGAAGCCA CAACTATCAA TGCAACCACA GCGAGCGTGG AAGTAACTCG

3501 TC AAAAATGGT ACAATTAAAG GCAACATTAC CTCGCAAAAT GTAACAGTCA
CAGCAACAGA AAATCTTGTT ACCACAGAGA ATGCTGTTCAT TAATGCAACC

3601 AGCGGCACAG TAAACATTAG TACAAAAACA GCGGATATTA AAGGTGGAAT
TGAATCAACT TCCGGTAATG TAAATATTAC AGCGAGCGGC AATACACTTA

3701 AGGTAAGTAA TATCACTGGT CAAGATGTAA CAGTAAACAG GGATGCACGA
GCCCTTGACAA CTACACGAGG CTCAACCATT AGTCGCACAA CAGGCAATGC

3801 AAATATTACA ACCAAAACAG GTGATATCAA CGGTAAAGTT GAATCCAGCT
CCGCTCTCTG AACACTTGTT GCAACTGGAG CAACTCTTGC TGTAGGTAAT

3901 ATTTCAGGTA ACACGTGTAC TATTACTGGG GATAGCGGTA AATTAACTC
CACAGTAGGT TCTACAATTA ATGGGACTAA TAGTGTAAAC ACCTCAAGCC

001 AATCAGGCCGA TATTGAAGGT ACAATTTCIG GTAATACAGT AAATGTTACA
GCAAGCACTG GTGATTTTAACT TATTGGAAAT AGTCCAAAAG TTCAAGCCGA

4101 AAATGGAGCT GCAACCTTAA CTGCTGAATC AGGCAAATTA ACCACCCAAA
CAGGCTCTAG CATTACCTCA ACCAATGGTC AGACAACCTCT TACAGCCCAAG

4201 GATAGCAGTA TCGCAGGAAA CATTAAATGCT GCTAATGTGA CGTTAAATAC
CACAGGCACT TTAACTACTA CACGGGATTC AAAGATTTAAC CCAACCAGTG

4301 GTACCTTTAC AATCAATCCA AAAGATGCCC AATTAGATGG TCGTGCATCA
GGTGACCGCA CAGTAGTAAA TGCAACTAAC GCAAGTGGCT CTGGTAACGT

4401 GACTGCCGAA ACCTCAAGCA GCGTGAATAT CACCGCGCAT TTAAACACAA
TAAATGGGT AAATATCAAT TCGGAAAATG GTAGAAAACAC TGTCGCCCTTA

501 AGAGGCAAG AAATTGATGT GAAATATATC CAACCAGTG TAGCAAGGT
AGAAGAGGTA ATTGAAGCGA AACCGTCTCT TGAGAAAGTA AAAGATTTAT

601 CTGATGAAGA AAGAGAAACA CTAGCCAAAC TTGGTGTAAG TCGTGTACGT
TTGGTTGAGC CAAATAATGC CATTACGGTT AATACACAAA ACCAGTTTAC

701 AACCAAACCA TCAAGTCAAG TGACAATTTC TGAAGGTAAG GCGTGTTTCT
CAAGTGGTAA TGGCGCACCA GTATGTACCA ATGTTGCTGA CGATGGACAG

801 CAG

COMPARISON OF DERIVED AMINO ACID SEQUENCE

(Musical notation continues across the page)

FIG. 10B

Hrww3com	101	NWKQFNIDQN	EMEQFLQESS	NSAVFNRVTS	DQISQLKSIL	DSNSQVFLIN	150
Hrww4com		NWKQFNIDQN	EMEQFLQESS	NSAVFNRVTS	DQISQLKGIL	DSNSQVFLIN	
Hrww1com		NWKQFNIDQN	EMVQFLQENN	NSAVFNRVTS	NQISQLKGIL	DSNSQVFLIN	
Hrww2com		NWKQFNIDQN	EMVQFLQENN	NSAVFNRVTS	NQISQLKGIL	DSNSQVFLIN	
							58/82
Hrww3com	151	PNGITIGKDA	IININSFTAS	TLDISNENIK	ARNFTLEQTK	DKALAEIVNH	200
Hrww4com		PNGITIGKDA	IININSFTAS	TLDISNENIK	ARNFTLEQTK	DKALAEIVNH	
Hrww1com		PNGITIGKDA	IININSFTAS	TLDISNENIK	ARNFTLEQTK	DKALAEIVNH	
Hrww2com		PNGITIGKDA	IININSFTAS	TLDISNENIK	ARNFTLEQTK	DKALAEIVNH	

FIG.10C

Htrw3com	201	GLITVGKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT	250	ISDIINPTIT
Htrw4com		GLITVGKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT		ISDIINPTIT
Htrw1com		GLITVGKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT		ISDIINPTIT
Htrw2com		GLITVGKDGS	VNLIGGKVKN	EGVISVNGGS	ISLLAGQKIT	59/82	ISDIINPTIT
Htrw3com	251	YSIAAPENEA	INLGDIFAKG	GNINVRAATI	RNKGKLSADS	300	VSKDKSGNIV

FIG. 10D.

Hmw4com	YSIAAPENEA	INLGDIFAKG	GNINVRAATI	RNKGKLSADS	VSKDKSGNIV
Hmw1com	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNKGKLSADS	VSKDKSGNIV
Hmw2com	YSIAAPENEA	VNLGDIFAKG	GNINVRAATI	RNKGKLSADS	VSKDKSGNIV
	301				350
Hmw3com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
Hmw4com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
Hmw1com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
Hmw2com	LSAKEGEAEI	GGVISAQNQQ	AKGGKLMITG	DKVTLKTGAV	IDLSGKEGGE
	351				400
Hmw3com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IWGDIALID
Hmw4com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IWGDIALID
Hmw1com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IWGDIALID
Hmw2com	TYLGGDERGE	GKNGIQLAKK	TTLEKGSTIN	VSGKEKGGRA	IWGDIALID

401

451

501

Hmw3 com	TARRKLTVNS	SISIERGSHL	ILHSEGQGGQ	GVQIDKDITS	.E...GGNLT
Hmw4 com	TANNRIYVNS	SINLSNGS.L	TLHTK...RD	GVKINGDITS	NE...NGNLT
Hmw1 com	TANQRIYVNS	SINL.SNGSL	TLWSEGRSGG	GVEINNDITT	GDDTRGANLT
Hmw2 com	TASRKLTVNS	SINGSNNGSHL	ILHSGQRGG	GVQIDGDIT.	...SKGGNLT

551

601

159

Hmw3.com	LNISGTVDIS	MKAPKVSWFY	RD.KGRTYWN	VTTLNVTSGS	KFNLSIDSTG	700
Hmw4.com	INISGIVTIN	QTTKKDVKYW	NA.SKDSYWN	VSSLTLNTVQ	KFTF.IKFVD	
Hmw1.com	LNISGKVNIS	MVLPKNESGY	DKFKGRTYWN	LTSLNVSESG	EFNLTIDSRG	

FIG.10G.

Hmw2com INISGNITIN QTRKNTSYW QTSHD.SHWN VSALNLETGA NFTF.IKYIS

701

750

Hmw3com SGSTG...PS IRNA..ELNG ITFN....KA TFNIAQGSTA NFSIKASIMP
Hmw4com SGSNS...QD LRSSRRSFAG VHFNGIGGKT NFNIGANAKA LFKLKPNAAT
Hmw1com SDSAGTLTQ.PYNLNG ISFN...KDT TFNVERNARV NFDIKAPIGI
Hmw2com SNSKGLTTQY RSSAGVNFNG V..N.;.GNM SFNLKEGAKV NFKLKPNNEM

751

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800

Hmw3com FKSANYAL. FNEDISVSG. .GGSVNFKLN ASSSNIQTPG VIKSQNFNV
Hmw4com DPKKELPIT. FNANITATGN SDSSVMFDIH A...NLTSRA AGINMDSINI
Hmw1com NKYSSLNYAS FNGNISVSG. .GGSVDFTLT ASSSNVQTPG VVINSKYFNV
Hmw2com NTSKPLPI.R FLANITATG. .GGSVFFDIY ANHS...GRG AELKMSEINI

801

850

Hmw3com SGGSTLNLKA EGSTETAFSI ENDLNLNATG GNITIRQVEG T..DSRVNKG
Hmw4com TGGLDFSITS HNRNSNAFEI KKDLTINATG SNFSLKQTKD SFYNEYSKHA

FIG. 10I.

Hmw3 com	FDNNGASNIS	IARGGAKFK.	DINNTSSLNI	TTNSDTTYRT	IIKGNISNKS
Hmw4 com	FTNNGTANIN	IKQGVVKLQG	DINNKGGLNI	TTNASGTQKT	IINGNITNEK
Hmw1 com	FDNKGNSNIS	IAKGGARFK.	DIDNSKNLSI	TTNSSSTYRT	IISGNITNKN
Hmw2 com	FTNNGTAEIN	ITQGVVKLG.	NVTNDGDLNI	TTHAKRNQRS	IIGGDIINNKK
			1001		1050
Hmw3 com	GDLNIIDKKS	DAEIQIGGNI	SQKEGNLTIS	SDKVNITNQI	TIKAGVEGGR
Hmw4 com	GDLNIKNIKA	DAEIQIGGNI	SQKEGNLTIS	SDKVNITNQI	TIKAGVEGGR
Hmw1 com	GDLNITNEGS	DTEMQIGGDI	SQKEGNLTIS	SDKINITKQI	TIKAGVDGEN ^{65/82}
Hmw2 com	GSLNITDSNN	DAEIQIGGNI	SQKEGNLTIS	SDKINITKQI	TIKKGIDGED
			1051		1100
Hmw3 com	SDSSEAENAN	LTIQTKELKL	AGDLNISGFN	KAEITAKNGS	DLTIGNASGG
Hmw4 com	SDSSEAENAN	LTIQTKELKL	AGDLNISGFN	KAEITAKNGS	DLTIGNASGG
Hmw1 com	SDSDATNNAN	LTIKTKELKL	TQDLNISGFN	KAEITAKDGS	DLTIGNTNSA
Hmw2 com	SSSDATSNAN	LTIKTKELKL	TEDLSISGFN	KAEITAKDGR	DLTIGNSNDG

10000000, 5000000

[illegible]

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Hmw2.com

[illegible]

Hmw3com	1301	TTKTGDINGK	VESSGSVTL	VATGATLAVG	NISGNTVTIT	ADSGKLTSTV	1350
Hmw4com		TTKTGDINGK	VESSGSVTL	VATGATLAVG	NISGNTVTIT	ADSGKLTSTV	
Hmw1com		SSQSGDIG..G	TISGGTVEVK	ATESLTTQSN	
Hmw2com		...GDIS..G	TISGNTVSVS	ATVDLTTKSG	

	1351		1400
Hmw3 com	GSTINGTNSV	TTSSQSGDIE	GTISGNTVNV TASTGDLTIG NSAKVEAKNG
Hmw4 com	GSTINGTNSV	TTSSQSGDIE	GTISGNTVNV TASTGDLTIG NSAKVEAKNG

SECRET

FIG. 10L.				
Hmw1 com	SKIKATTGEA	NVTSATGTIG	GTISGNTVNV	TANAGDLTVG NGAEGINATEG
Hmw2 com	SKIEAKSGEA	NVTSATGTIG	GTISGNTVNV	TANAGDLTVG NGAEGINATEG
	1401			1450
Hmw3 com	AATLTAESGK	LTTQTGSSIT	SSNGQTTLTA	KDSSIAGNIN AANVTLNTTG
Hmw4 com	AATLTAESGK	LTTQTGSSIT	SSNGQTTLTA	KDSSIAGNIN AANVTLNTTG
Hmw1 com	AATLTTSSGK	LTTEASSHIT	SAKGQVNLSA	QDSSVAGSIN AANVTLNTTG
Hmw2 com	AATLTATGNT	LTTEAGSSIT	STKGQVDLLA	QNSSIAGNIN AANVTLNTTG

Hmw3com	1451	TLTTTGDSKI	NATSGTLTIN	AKDAKLDGAA	SGDRTVNVNAT	NASGSGNVTA	1500
Hmw4com		TLTTTGDSKI	NATSGTLTIN	AKDAKLDGAA	SGDRTVNVNAT	NASGSGNVTA	
Hmw1com		TLTTVKGSNI	NATSGTLTIN	AKDAEELNGAA	LGNHTVNVNAT	NANGSGSVIA	
Hmw2com		TLTTVAGSDI	KATSGTLTIN	AKDAKLLNGDA	SGDSTEVENAV	NASGSGSVTA	
	1501						1550

Hmw3 com	KTSSSVNITG	DLNTINGLNI	ISENGRNTVR	LRGKEIDVKY	IQPGVASVEE
Hmw4 com	KTSSSVNITG	DLNTINGLNI	ISENGRNTVR	LRGKEIDVKY	IQPGVASVEE
Hmw1 com	TTSSRVNITG	DLITINGLNI	ISKNGINTVL	LKGVKIDVKY	IQPGIASVDE
Hmw2 com	ATSSSVNITG	DLNTVNGLNI	ISKDGRNTVR	LRGKEIEVKY	IQPGVASVEE

Hmw3 com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNAIT	VNTQNEFTTK	1600
Hmw4 com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNAIT	VNTQNEFTTK	
Hmw1 com	VIEAKRILEK	VKDLSDEERE	ALAKLGVS AV	RFIEPNNTIT	VDTQNEFATR	69/82
Hmw2 com	VIEAKRVLEK	VKDLSDEERE	TLAKLGVS AV	RFVEPNNTIT	VNTQNEFTTR	

Hmw3com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QQ	1632
Hmw4com	PSSQVTISEG	KACFSSGNGA	RVCTNVADDG	QQ	
Hmw1com	PLSRIVISEG	RACFSNSDGA	TVCVNIADNG	R.	
Hmw2com	PSSQVIISEG	KACFSSGNGA	RVCTNVADDG	QP	

	1632
Hmw3com	PSSQVTISEG KACFSSNGA RVCTNVADDG QQ
Hmw4com	PSSQVTISEG KACFSSNGA RVCTNVADDG QQ
Hmw1com	PLSRIVISEG RACFSNSDGA TVCVNIADNG R.
Hmw2com	PSSQVIISEG KACFSSNGA RVCTNVADDG QP

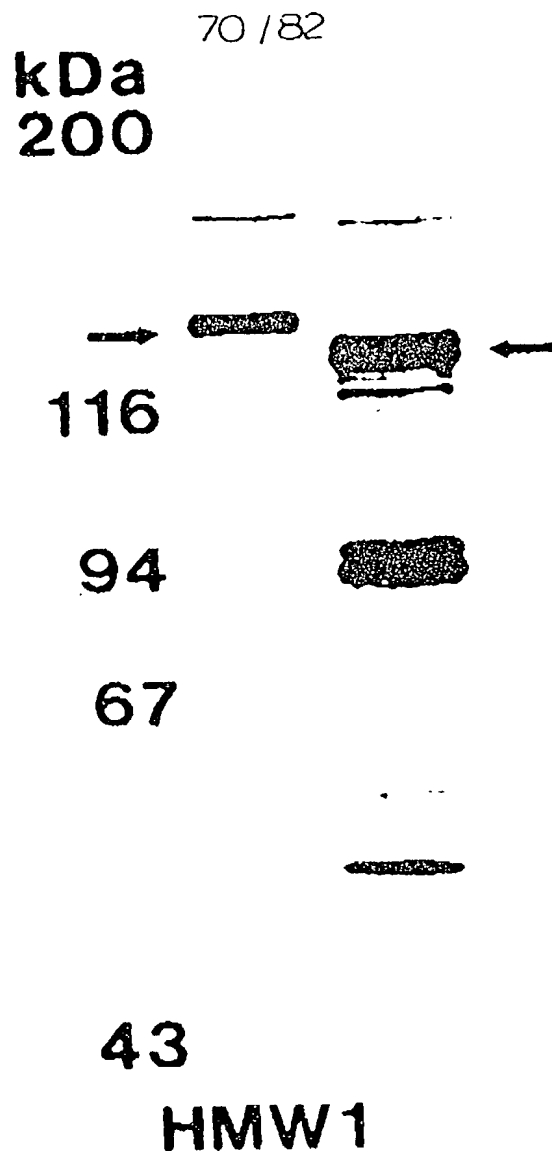
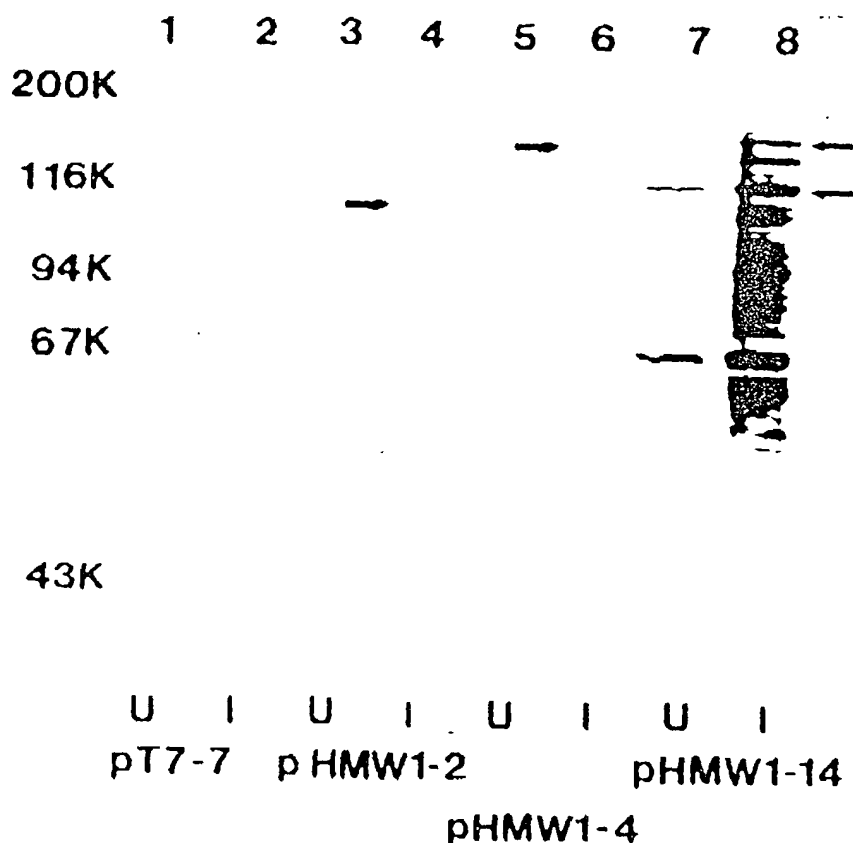


FIG. 11 **HMW 2**

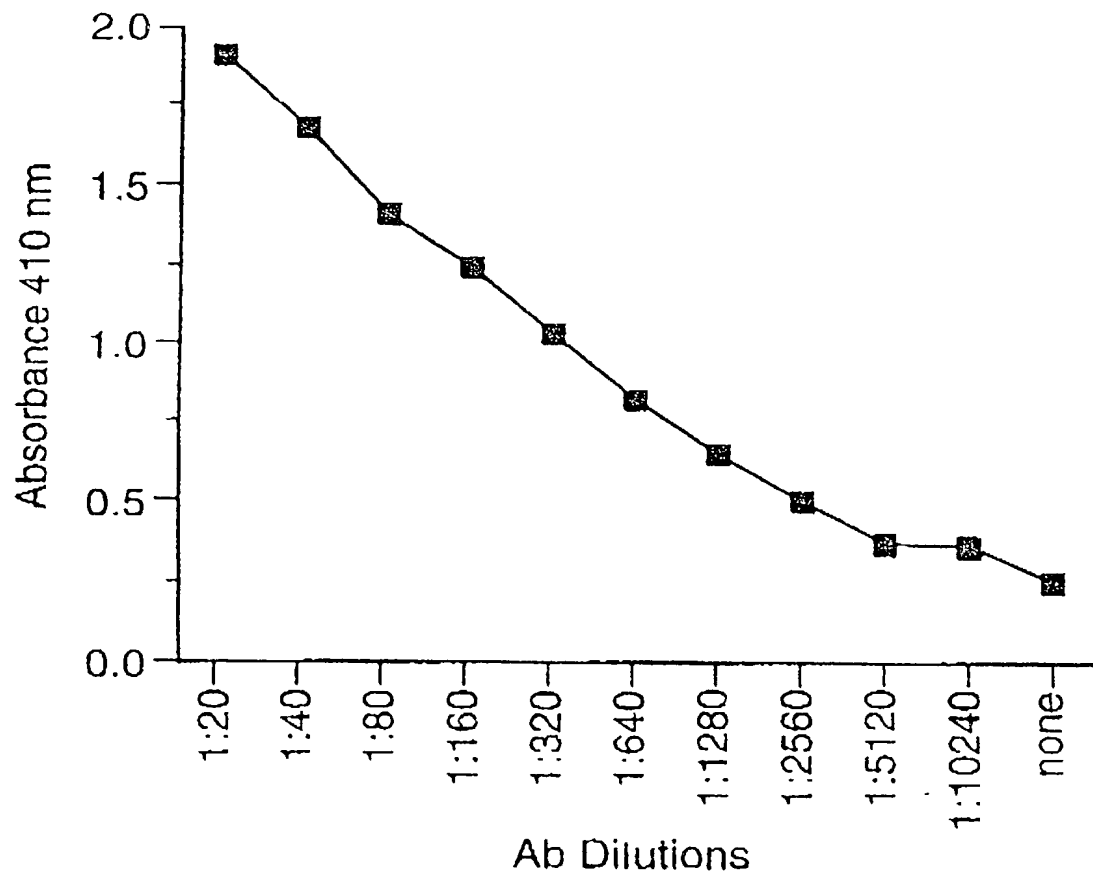
WESTERN IMMUNOBLOT ASSAY OF PHAGE LYSATES CONTAINING EITHER THE HMW1 OR HMW2 RECOMBINANT PROTEINS. LYSATES WERE PROBED WITH AN *E. COLI*-ABSORBED ADULT SERUM SAMPLE WITH HIGH-TITER ANTIBODY AGAINST HIGH-MOLECULAR-WEIGHT PROTEINS. THE ARROWS INDICATE THE MAJOR IMMUNOREACTIVE PROTEIN BANDS OF 125 AND 120 kDa IN THE HMW1 AND HMW2 LYSATES, RESPECTIVELY.

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**FIG. 12**

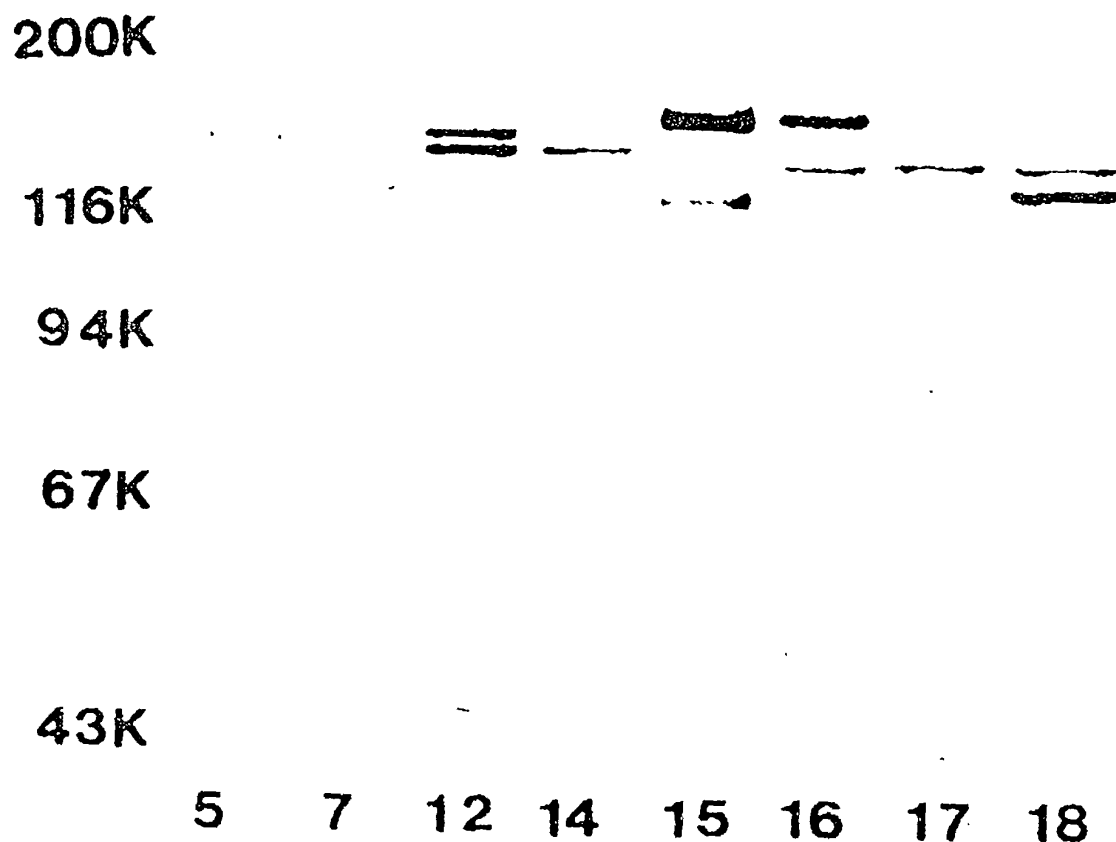
WESTERN IMMUNOBLOT ASSAY OF CELL SONICATES PREPARED FROM *E. COLI* TRANSFORMED WITH PLASMID pT7-7 (LANES 1 AND 2) pHMW1-2 (LANES 3 AND 4), pHMW1-4 (LANES 5 AND 6), OR pHMW1-14 (LANES 7 AND 8). THE SONICATES WERE PROBED WITH AN *E. COLI*-ABSORBED ADULT SERUM SAMPLE WITH HIGH -TITER ANTIBODY AGAINST HIGH - MOLECULAR -WEIGHT PROTEINS. LANES LABELED U AND I REPRESENT SONICATES PREPARED BEFORE AND AFTER INDUCTION OF THE GROWING SAMPLES WITH IPTG, RESPECTIVELY. THE ARROWS INDICATE PROTEIN BANDS OF INTEREST AS DESCRIBED IN THE TEXT.

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**FIG. 13**

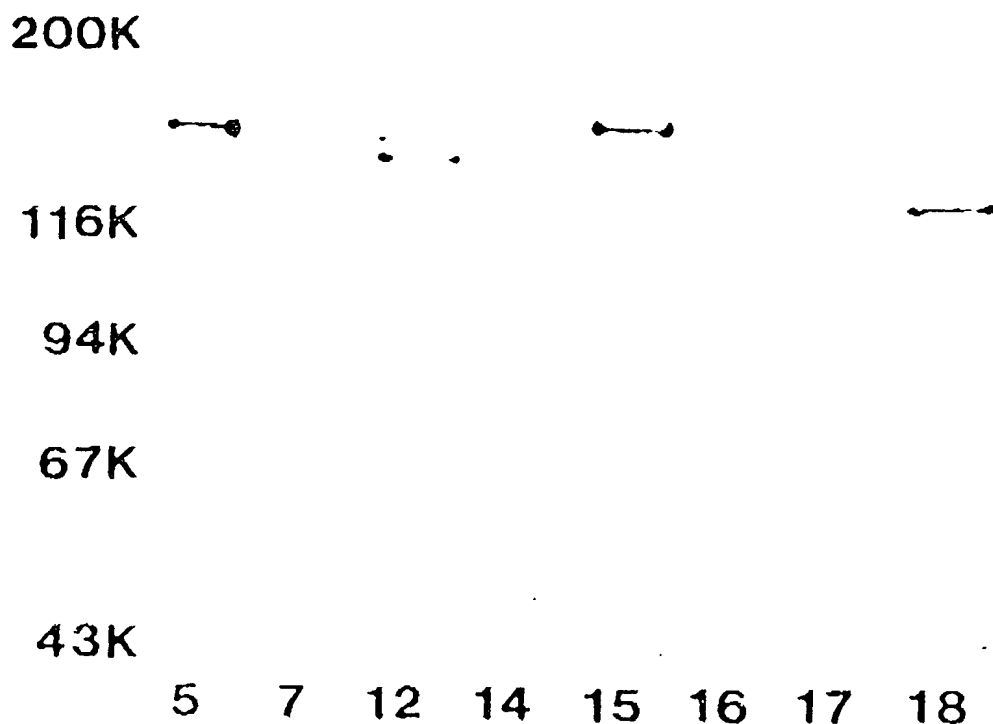
ELISA WITH rHMW1 ANTISERUM ASSAYED AGAINST PURIFIED
FILAMENTOUS HEMAGGLUTININ OF *B. PERTUSSIS*. Ab, ANTIBODY.

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**FIG. 14**

WESTERN IMMUNOBLOT ASSAY OF CELL SONICATES FROM A PANEL OF EPIDEMIOLOGICALLY UNRELATED NONTYPEABLE *H. INFLUENZAE* STRAINS. THE SONICATES WERE PROBED WITH RABBIT ANTISERUM PREPARED AGAINST HMW1-4 RECOMBINANT PROTEIN. THE STRAIN DESIGNATIONS ARE INDICATED BY THE NUMBERS BELOW EACH LANE.

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**FIG. 15**

WESTERN IMMUNOBLOT ASSAY OF CELL SONICATES FROM A PANEL OF EPIDEMIOLOGICALLY UNRELATED NONTYPEABLE *H. INFLUENZAE* STRAINS. THE SONICATES WERE PROBED WITH MONOCLONAL ANTIBODY X3C, A MURINE IgG ANTIBODY WHICH RECOGNIZES THE FILAMENTOUS HEMAGGLUTININ OF *B. PERTUSSIS* (13). THE STRAIN DESIGNATIONS ARE INDICATED BY THE NUMBERS BELOW EACH LANE.

AMENDED SHEET

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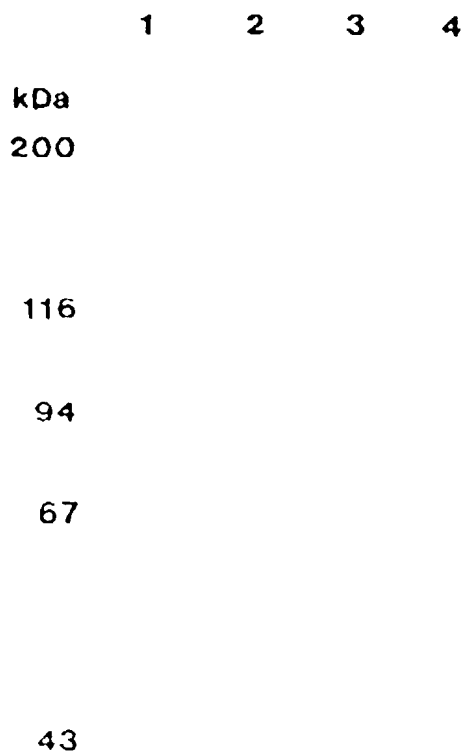
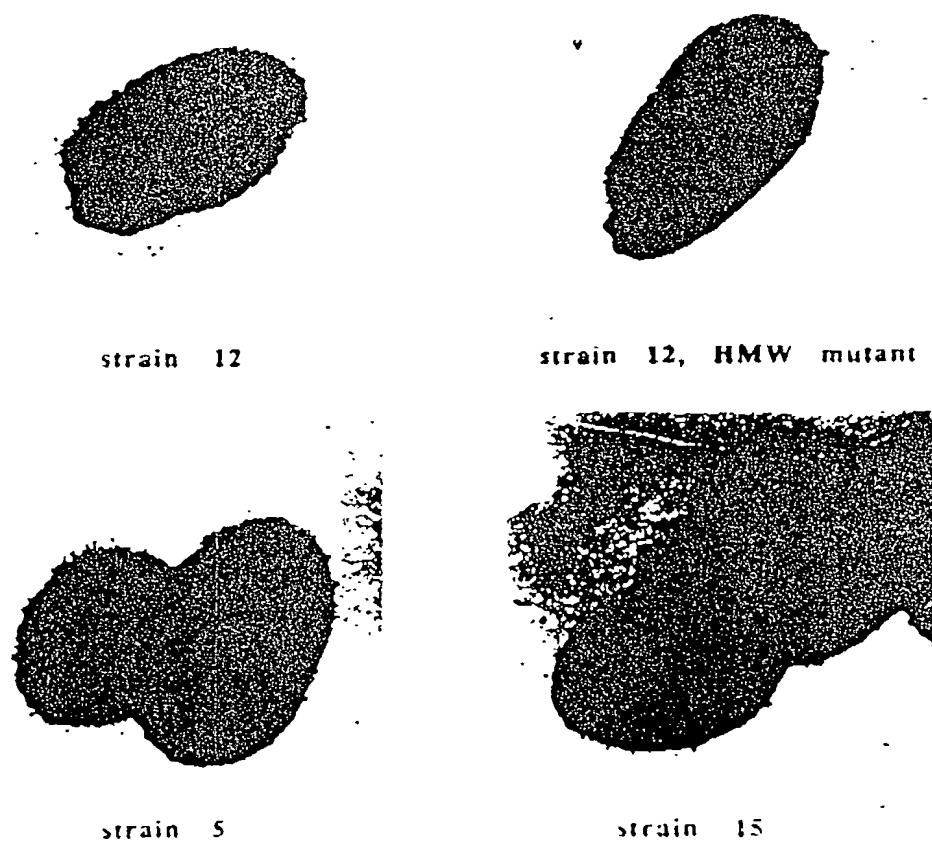


FIG. 16

IMMUNOBLOT ASSAY OF CELL SONICATES OF NONTYPABLE *H. INFLUENZAE* STRAIN 12 DERIVATIVES. THE SONICATES WERE PROBED WITH RABBIT ANTISERUM PREPARED AGAINST HMW-1 RECOMBINANT PROTEIN. LANES: 1, WILD-TYPE STRAIN; 2, HMW-2⁻ MUTANT; 3, HMW-1⁻ MUTANT; 4, HMW-1⁻ / HMW-2⁻ DOUBLE MUTANT.

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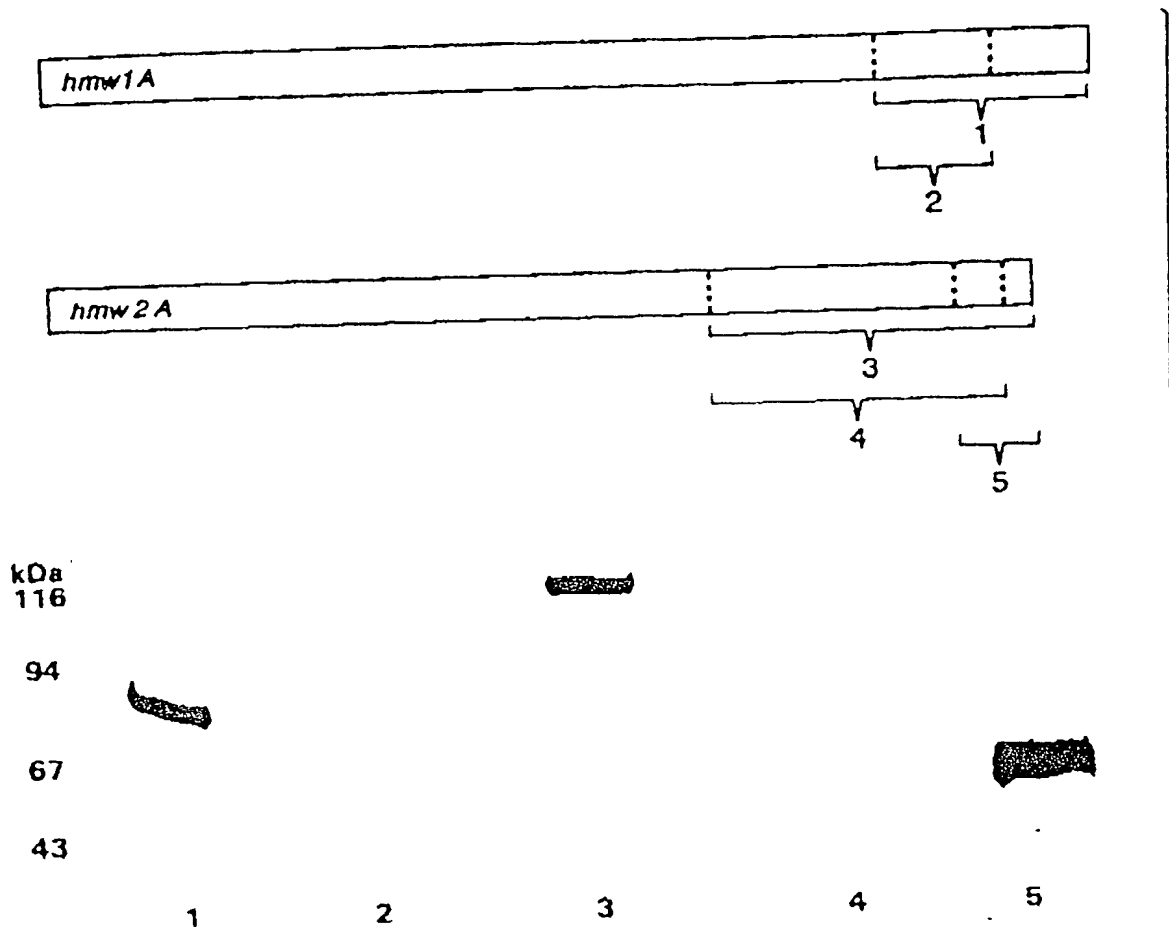


IMMUNOELECTRON MICROSCOPY WITH Mab AD6

FIG.20

AMENDED SHEET

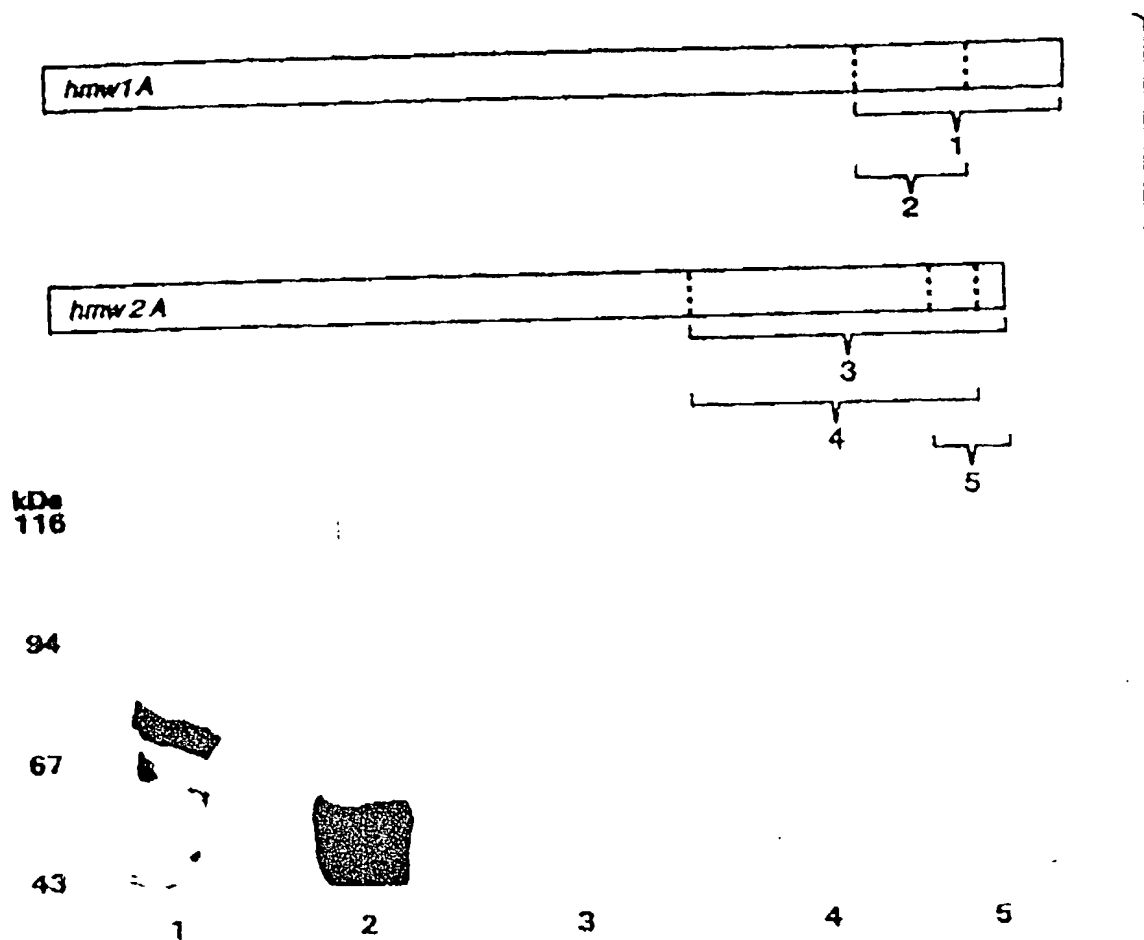
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WESTERN IMMUNOBLOT ASSAY WITH Mab AD6 AND
HMW1A OR HMW2A RECOMBINANT PROTEINS

FIG.21

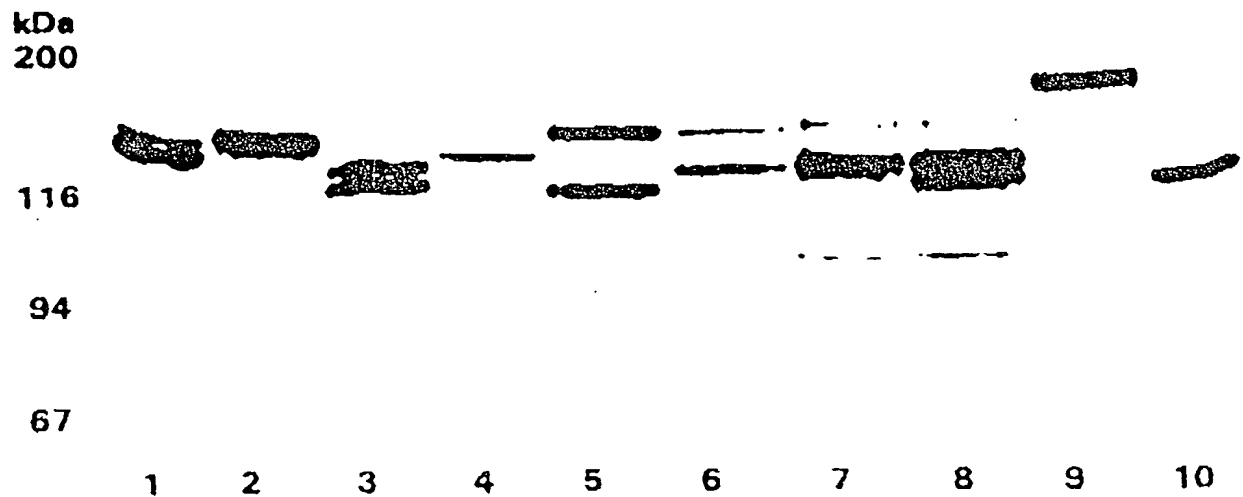
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WESTERN IMMUNOBLOT ASSAY WITH Mab 10C5 AND
 HMW1A OR HMW2A RECOMBINANT PROTEINS

FIG.22

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WESTERN IMMUNOBLOT ASSAY WITH Mab AD6 AND
TEN UNRELATED NONTYPABLE *HAEMOPHILUS*
INFLUENZAE

FIG.23